Towards a Critical Understanding of the Implementation of Environmental Accounting and Disclosure Practices

by

Solmaz Rohani-Najafabadi

A thesis submitted in partial fulfilment of the requirements for the degree of

Doctor of Philosophy

University of Warwick

Warwick Business School

August 2015

Table of Contents

Table of Tables

Table of Figures

Acknowledgements

I would like to use this opportunity to express my gratitude to everyone who supported me throughout the course of this research project.

First and foremost, I would like to appreciate my supervisors for all their guidance, constructive criticism, profound knowledge, and support – Dr Ann-Christine Frandsen for her inspiring guidance, endless patience and motivation; and Professor Davide Nicolini for his insightful feedback. I appreciate all their contributions of time and ideas.

Besides my supervisors, my special thanks go to my former supervisor, Professor Keith Hoskin, who with his extensive knowledge about Foucault's work and theorising, helped me to understand better Foucault's approach for this dissertation.

I am also grateful for the never-ending support that I have received from my parents and my brother all the way from the beginning of my studies.

Lastly, I should sincerely thank Pedram, whose endless love has always been encouraging and motivating.

Declaration

This thesis is entirely the author's own work and has not been submitted for a degree at another university.

Abstract

By recognising Climate Change and man-made environmental problems as global issues of 21st century, human has increasingly started to 'account' for his environmental impacts by means of accounting-based practices and 'report' on his environmental performance via publishing Corporate Social Responsibility reports even though accounting's potency in serving environmental spheres is criticised. This research, by drawing on Foucault's 'bottom-up' approach of practice, studies 'accounting as discourse and practice and in practice' to investigate how and how far the 'experience' of implementing environmental accounting practices is made to happen.

In seeking to explore 'what accounting is' and 'what accounting does' where and when it plays role in generating environmental solutions or being part of environmental problem-solving, this study first begins with historical context to the emergence of 'green' discourses and practices of our 'present'. An ethnographic fieldwork within two dissimilar organisational sites is also carried out through observing how implementation of environmental accounting practices is made to happen by subjects acting as Report Preparers (RPs) in process of composing CSR-oriented reports.

This study sheds light on backstage of CSR-oriented reports to explore role and functioning of accounting wherever and whenever it shows environmental intervention. This study discovers that how 'green accounting' has emerged as a 'trans-disciplinary' knowledge-based technique with 'green power' and 'truth-revealing' performance in three possible 'green roles'. It also shows that how RPs' ways of thinking, acting, and strategising are shaped through their interplay with the forms of accounting that they are implementing, who are consequently constituted as 'green ethical subjects' that act on non-environmental actions of others. By demonstrating the ways in which practices of 'naming and counting' in conjunction with cost-benefit thinking and three interconnected issues of 'Economy', 'Efficiency', and 'Effectiveness' may enable management of man-made environmental problems, this study contributes to critical accounting and environmental accounting literature.

Abbreviations

BBC	British Broadcasting Corporation
CCA 2008	Climate Change Act 2008
CCC	Committee on Climate Change
CCL	Climate Change Levy
CHP	Combined Heat and Power
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CRC	Carbon Reduction Commitment
CSO	Chief Sustainability Officer
CSR	Corporate Social Responsibility
DAKP	Doha Amendment to the Kyoto Protocol
DBERR	Department of Business, Enterprise and Regulatory Reform
DEC	Display Energy Certificate
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
DES	Department for Education and Skills
DIUS	Department of Innovation, Universities, and Skills
DNA	Deoxyribonucleic acid
DTI	Department of Trade and Industry
ECOSOC	United Nations Economic and Social Council
EMS	Estates Management Statistics
EPBCI	Energy Performance of Buildings (Certificates and Inspections)

EU	European Union
EU ETS	European Union Emission Trading Scheme
FA	Financial Accounting
GHG	Greenhouse Gas
GRI	Global Reporting Initiative
HE	Higher Education
HECM	Higher Education Carbon Management
HEFCE	Higher Education Funding Council for England
HEI	Higher Education Institution
HESA	Higher Education Statistics Agency
HCI	Hydrogen Chloride
ID	Identity Document
IT	Information Technology
IUCN	International Union for Conservation of Nature
KP	Kyoto Protocol
kWh	Kilowatt hour
LPG	Liquefied Petroleum Gas
MA	Management Accounting
NF_3	Nitrogen Trifluoride
OECD	Organisation for Economic Co-operation and Development
PDM	Performance Data Management
RIBA	Royal Institute of British Architects
RP	Report Preparer
SCC	Sustainable Cost Calculation
SD	Sustainable Development

SQW	Segal, Quince, Wicksteed
UK	United Kingdom
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCHE	United Nations Conference on the Human Environment
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UPE	Utilities Project Engineer
US (USA)	United States (of America)
UTA	Utilities Technical Assistant
WRI	World Resources Institute
WWF	World Wildlife Fund

Chapter 1: Introduction

1. Climate change and environmental issues: A hot topic?

We are living in an era in which 'climate change' is recognised by the United Nations (UN) as one of the 'global issues' which can only be resolved through global action.[1] Furthermore this is an issue which has increasingly become worse through the damage that human activity has caused to the 'environment', with devastating consequences now and into the foreseeable future, unless radical changes to our current ways of life are undertaken.[2] Global changes have local consequences, as research done for the UK's Department for the Environment, Food and Rural Affairs (DEFRA)[3] makes clear, saying: "climate change abroad will have a more immediate effect on the UK than climate change at home" (BBC, 17 June 2013).[4]

This scenario only reinforces concerns raised over half a century ago by the publication of Rachel Carson's *Silent Spring* (Carson, 1962), where she argued that the result of this human life-style, if not radically changed, would be a catastrophe for the whole earth. Soon after certain thinkers were already anticipating that "quality of life [would] become the business of business" (Drucker, 1969, p.77). Now, 50 years on, it is increasingly the case that corporate entities and also governments have taken steps to both 'account' for and re-shape their environmental footprint and to report on their eco-friendly developments as a way to show that they are (a) accountable to society and nature for their environmental impacts, (b) seeking

[1] For more information, visit: http://www.un.org/en/globalissues/ (accessed on 06/09/2014)
[2] For more information, visit: http://www.un.org/en/globalissues/climatechange/index.shtml and http://www.un.org/en/globalissues/environment/ (accessed on 06/09/2014)
[3] DEFRA is the UK government department responsible for policy and regulations on environmental, food and rural issues since 2001.
[4] For more information, visit: http://www.bbc.co.uk/news/science-environment-22913559 (accessed on 17 June 2013)

to reduce their contribution to climate change, and (c) getting closer to 'sustainable development', at least environmentally. [Questions are raised, as we shall consider further below, as to how far these are genuine initiatives for change or forms of what is increasingly known as 'greenwash'. Nevertheless the fact and extensiveness of such initiatives is not in doubt.]

So for instance, we see political as well as business initiatives aspiring to a green future, as when the Prime Minister of the United Kingdom, David Cameron, voiced the desire in 2013 for "having a flight from Britain to New York that's carbon free", and announced a £1m Longitude Prize sponsored by the government for providing 'solutions' for such big problems of our time (BBC, 14 June 2013)[5]. At the same time, the same concerns as to how far such calls to action translate into effective long-term political commitment to substantive environmental change arise. There is still an ongoing increase in the level of global CO_2 emissions (Figure 1), and no current sign that individual governments or global multi-government agreements are producing any significant change to this state of affairs.[6]

[5] For more information, visit: http://www.bbc.co.uk/news/uk-politics-22892443 (accessed on 16 June 2013)
[6] For more information, visit: http://infographics.pbl.nl/website/globalco2/ (accessed on 19 September 2014)

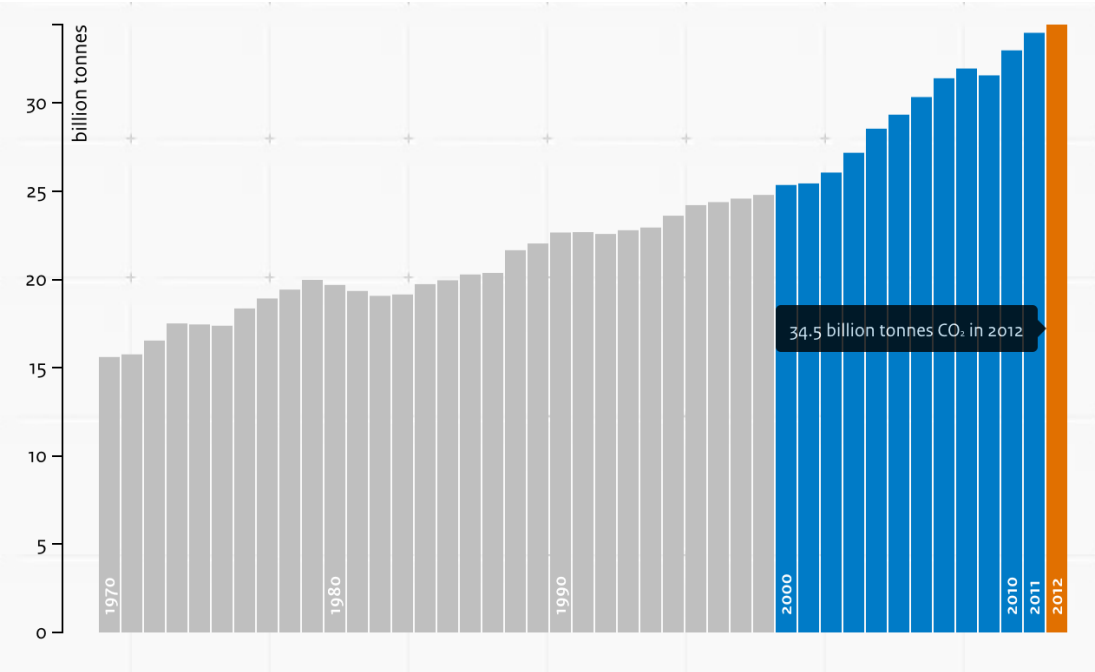


Figure 1: Global trend of CO_2 emissions

Nevertheless, over recent decades involvement with environmental and social issues has grown in different forms. For instance, a range of organisations and legal entities have become involved in environmental activities and promoting sustainability. These include organisations such as the World Wide Fund for Nature (WWF, originally named as World Wildlife Fund), the International Union for the Conservation of Nature (IUCN), and the United Nations Environment Programme (UNEP). Mainstream intergovernmental agencies such as the Organisation for Economic Co-operation and Development (OECD), and the World Bank have also become involved, as have national-level governments and governmental organisations and of course many large corporations (e.g. Adidas, BP, Jaguar).

Academic researchers have also continued and expanded Carson's work including within the fields of management and accounting. *Silent Spring* can be seen as having opened a path to thinking and acting differently towards nature and humanity's impacts upon it, including how to use accounting to enable environmentally positive and significant changes. The diverse range of academic work done in the field of social and environmental matters has recently mushroomed, as evidenced in the review of the rich variety of work and approaches presented by Ian Thomson (2014). This indicates that research in this field of accounting is now a serious and integral feature of the accounting research agenda.

1.1. Environmental Accounting: A modern accounting experience

Thus what one might call the 'discourse' concerning the human impact on nature and the need to 'account' for that, which emerged nearly half a century ago, has permeated into the ways of thinking and acting not just of individuals but of large-scale business, governmental and non-governmental entities, and into the articulation of points of view and arguments on all sides of these issues. As this has taken place, accounting statements and practices have been put to use, as in other aspects of business and governmental activity, to argue different cases, now including those articulated by critics of corporate and governmental action. So one can see that accounting-infused statements and initiatives concerned with green issues are now regularly incorporated into the discourse of corporations in such forms as Corporate Social Responsibility (CSR) reports, and also increasingly figure as goals in their statements of strategic aims and objectives. Governments also produce their own

forms of such reports and their own versions of strategic green objectives. [Indeed one such set of strategic documents issued by the UK Government beginning in 2005 play a significant role in the narrative developed here concerning the roles played by accounting in developing environmental initiatives in the UK Higher Education sector.]

It is in that context that this dissertation seeks to conduct an investigation "to explore the role and functioning of accounting in the environmental and sustainability spheres" (Hopwood, 2009, p.439), doing so in such a way that it treats both accounting discourse and practice as the focal point of its problematisation of the issues for investigation. In one respect it therefore seeks to contribute to an appreciation of how forms of environmental accounting discourse and practice might develop in ways that will enable them to contribute, perhaps in ways beyond that they currently do, to effective and sustained environmental problem-solving.

At the same time, it seeks to pursue this long-term objective from a specific and contemporary theoretical approach which may enable a 'bottom-up' form of analysis of how accounting-infused statements and initiatives get constructed and gain potential purchase in the fields of environmental debate taking place within and across particular organisations. To do so it seeks to focus on the role of particular expert subjects in the construction and circulation of such statements and initiatives, and does so in particular within one particular institution as its main 'research site' for fieldwork.

It will suggest that such experts, who may but often do not have a prior extensive grounding in accounting as a knowledge field, bring a range of disciplinary expertises to bear in developing what will be analysed, drawing on the analysis of 'experience' developed by Michel Foucault (e.g. Foucault, 2000c, p.200), as a form of 'experience' entailing a general relation to modern expert or 'disciplinary' knowledge, a grounding in particular forms of expert or professional 'conduct', and through these factors a particular relation of the subject to his or her 'self'. It will suggest that such a form of subject might be named as the 'environmental accountant' who becomes capable of composing kinds of accounting statements (which reveal environmental truths) in addition to employing and implementing accounting-based practices (which generate such environmental truths/solutions).

Therefore, this study seeks to scrutinize 'accounting as discourse and practice in practice' in situations where environmental intervention is at stake. So, in a sense it goes beyond the surface manifestations of such intervention in such forms as CSR reports and Government plans and initiatives to what has been characterised as a 'back-stage' area (O'Dwyer et al., 2011) where insufficient attention has been paid, as they put it, to "how the 'back-stage' of … practice is constructed by (accounting) practitioners" (ibid., p.33).

So this investigation turns its focus towards events and activities which occur before the publication of such environmental reports, and to the processes through which environmental statements are prepared by subjects who frequently have a

'transdisciplinary' background and are generally denoted here as Report Preparers (RPs).

In its approach, this study draws theoretically on a form of 'bottom-up' approach developed by Michel Foucault which draws in part on the concept of experience as just set out and also on a range of recent work which has re-read Foucault's *oeuvre* to argue for the importance to Foucault throughout his project of a double focus on both what is said or written as 'the statement' and on what is done by humans subjects, individually or *en masse*, at the level of 'practices'. This means that there are two dimensions to the study.

First in line with Foucault's commitment to seeing how the past is implicated in the present (as in the view of experience as not being constituted purely within 'the subject' in an ongoing 'present'), the study seeks to locate the activities it observes in various field-based settings in appropriate diachronic or historical frames or perspectives. Thus it takes into account the political and economic and environmental movement developments across recent decades, as well as more recent initiatives and developments such as the emergence of a corporate and governmental 'environmental' discourse and practice; it also seeks to locate the activities of those studied in the field in terms of archival materials available within the organisational contexts where they work.

At the same time, in its fieldwork dimension, the study is designed as an ethnographic field-work case study. Its immediate organizational context is that of a British university; and in its field-work it seeks to apply its bottom-up approach to

study the ‘experience’ of implementing environmental accounting statements and practices as exemplified in the actions of the expert human subjects, the RPs, whom it follows. In this way, the study seeks to provide new insights into how the interplay takes place between ‘accounting’ statements and practices and the human subjects who articulate such statements and act to enable the implementation of accounting-infused initiatives.

To conclude, this thesis seeks to answer ‘how and how far are accountants and other practitioners implementing environmental accounting in practice and generating environmental information?’ in order to provide further insights on ‘why is accounting increasingly in demand to solve and manage environmental problems?’. By investigating these questions this study aims to shed more light on implementation of accounting practices in process of preparing CSR-oriented reports in order to:

- contribute to the current state of knowledge regarding ‘what accounting is’ and ‘what accounting does’ in environmental spheres, and
- provide further insight into “how accounting might contribute to the SD [sustainable development] debate” (Bebbington, 2001, p.151).

1.2. Thesis outline

This dissertation comprises of seven chapters. The next chapter reviews the environmental accounting literature and reflects on some of the issues raised therein in regard to the application of accounting for promoting environmental performance. It identifies two streams of analysis within the literature which highlight in differing

but complementary ways the need for 'critical' forms of accounting analysis; it then considers how Foucault's analytical approach as understood in recent re-readings might constitute one appropriate form of such critical accounting which may move beyond some of the gaps or silences identified in the critical analyses of the current literatures. Chapter 3 discusses the methodological issues faced in this kind of approach insofar as they relate firstly to the theoretical approach adopted and then to the empirical dimensions, diachronic and synchronic, through which this investigation is operationalised; it seeks to explain why the methods chosen have been adopted and to clarify issues of research design, choice of fieldwork sites, and more detailed methodological issues such as access, data collection, and data analysis. This chapter also reflects on relevant ethical issues and how they were confronted and resolved.

The main body of the study is presented in Chapters 4 and 5 and tells the story of 'how the experience of implementing environmental accounting and disclosure practices is made to happen'. It is presented in an interacting way across these chapters, with a range of major issues and findings summarised at the end of each of the Chapters. Taken together, the chapters draw on the mix of secondary and primary archival and interview material gathered to describe the emergence and circulation of green agendas first in the wider social, political and economic world across recent decades and then to move the focus more to the main research site discussed in the rest of the dissertation, the UK institution designated as University X. Here I investigate the implementation of accounting-based practices in the process of composing CSR-oriented reports.

The major findings of the study are then reviewed and discussed in Chapter 6 in order to highlight the major roles and functioning of accounting in process of preparing CSR-oriented reports. Finally, Chapter 7 concludes the study with a final summary of the overall conclusions, while also stating the major limitations to the study and identifying possibilities on how this study can open new doors for further research.

Chapter 2: Literature Review and Theoretical Underpinnings

2. Introduction

This chapter seeks first to highlight issues raised by the environmental and the environmental accounting literatures: second to indicate possible empirical gaps or theoretical silences in the way that the literature has developed to date; and third to propose how the research approach to be developed here may contribute to moving beyond such gaps and silences.

To further these objectives, it draws on a range of critical work undertaken in accounting, some within and some outside the environmental accounting field; at the same time it concludes by focussing in particular on the work of Michel Foucault and on recent re-interpretations of his approach set out in accounting and management literatures and beyond (e.g. Paltrinieri, 2012; Skinner, 2013; Webb, 2013; Hoskin, 2015).[7] Such re-interpretations vary in their details (which are discussed further in 2.4 below); but taken together they offer intriguing re-readings of Foucault and new understandings of what constitutes a 'Foucauldian' approach.

In particular, they point out how Foucault is always concerned with how humans in a given time and place get constituted as thinking, acting and 'discoursing' subjects and how such subjects, through the statements made in particular 'discourses' in that time and place, name and construct different objects. Thus there will be, in each era and location, modes of thinking, resulting in a particular 'mode of subjectivation'

[7] These re-interpretations were initially drawn to my attention by Professor Keith Hoskin, who was until his retirement from Warwick the second supervisor for my PhD. He very kindly shared with me drafts of a number of his papers which re-read Foucault's work and ideas in various respects, including pre-publication drafts of his 2015 article. I have, with the encouragement of my supervisors, drawn on this work in undertaking this literature review; I have also benefited from informal communications and discussions with Professor Hoskin as the literature review has taken shape.

and a reciprocal 'mode of objectivation'; and 'it is from their mutual development and reciprocal bond that what we might call "truth games" arise' (Florence, 1994, pp.314-315).

Thus these re-readings argue that, in both his empirical and theoretical work, Foucault did not move from an 'archaeological' to a 'genealogical' form of analysis, but instead continued to focus *both* on 'statements' (the object of his archaeological analyses) *and* on the 'practices' which are the focus of his genealogical ones: and indeed this is something that Foucault himself also stressed (e.g. Foucault, 1986, p.13; Foucault, 2000b, pp.315-316, 318).[8]

They also propose forms of 'bottom-up' analysis which focus initially on the issue of the relations between modes of 'thinking, acting and saying', rather than beginning from social or economic levels of analysis: and where they turn to issues of power, or of relations between power and knowledge, they draw from Foucault again a justification for the same type of bottom-up analysis. For Foucault suggests that even the history of the state should be studied from the bottom up: in the original French version (Foucault, 2004) of his extended analysis of governmentality, contained in the lectures from 1978 published as *Security, Territory, Population* (Foucault,

[8] It is worth noting that this is a repeated emphasis in Foucault. In his Introduction to the second volume of his *History of Sexuality* he states that 'this analysis of desiring man is situated at the point where an archaeology of problematisations and a genealogy of practices of the self intersect' (1986, p.13). In 'What is Enlightenment?' he proposes that his work, understood as a 'historical ontology of ourselves' (Foucault, 2000b, p.315), must be a form of criticism which operates as 'a historical investigation into the events that have led us to constitute ourselves and to recognise ourselves as subjects of what we are doing, thinking, saying'; as such 'it is genealogical in its design and archaeological in its method' (Foucault, 2000b, p.315). In the final paragraph of this piece he comes back to this theme, observing: 'These inquiries have their methodological coherence in the at once archaeological and genealogical study of practices envisaged simultaneously as a technological type of rationality and as strategic games of liberties' (Foucault, 2000b, p.319).

2009a), he concludes by proposing that we should try to analyse "the state as a way of acting, the state as a way of thinking" (Foucault, 2004, p.366).[9]

This again is in line with a bottom-up form of analysis, where modes of power are understood as forms of 'indirection' rather than 'direction' or 'domination', since initially subjects must act on other subjects, in a process of 'acting on the actions of others'.[10] This ultimately offers a different kind of approach to seeking to explain how the historically specific 'truth games' of a given era play out.

On the basis of these recent reinterpretations, it is suggested here that this type of Foucauldian analysis is a particularly valuable way of approaching the question of accounting's interplays with environmental issues and concerns. First it is apparent that the 'environment' has become a major object of both discursive *and* practical concern; second it has therefore become an arena where 'truth claims' are highly contested as well as one where a range of often conflicting (and also self-interested) practical solutions to problems are advanced; and third it is a field where increasingly diverse forms of expert disciplinary knowledge are brought to bear to seek to 'act on the actions of others' to generate, or to gain assent to, particular examples or types of proposed solution. Finally, within this field of diverse expertise, the knowledge configurations which are deployed to make truth claims or

[9] This is a translation of a passage in the final paragraph of the original French text of the lecture series by Foucault published as *Securité, territoire, population* (2004), which reads as follows: '*L'État comme manière de faire, l'État comme manière de penser*'. Unfortunately the English translation omits the second phrase in the quotation, as Keith Hoskin has pointed out to me.

[10] Foucault gives arguably his most extensive reflection on the relation between human subjects and power in 'The Subject and Power' (Foucault, 1982); here he specifies things as follows: "what defines a relationship of power is that it is a mode of action which does not act directly and immediately on others. Instead it acts upon their actions: an action upon an action, on existing actions or on those which may arise in the present or the future" (Foucault, 1982, p.220).

construct solutions increasingly include accounting, and, as will be argued here, accounting's roles are often surprisingly central, both to the construction of truth claims and the development or implementation of solutions.

The chapter therefore seeks firstly to locate this study within a range of existing relevant research literatures, as well as within the environmental accounting literature as such; and at the same time it seeks to indicate how the particular research approach developed here has a relevant and appropriate theoretical grounding for the research questions it poses. The methodological implications of how these questions may be appropriately investigated are taken up in the following chapter.

2.1. Green Society: A democratic demand

Along with the corporate-dominated economic growth and the growing 'economisation' of people's daily lives of the past half century, an increasing concern with the environmental implications of such growth and the ways in which we are being 'remade' as human subjects has become a part of public discourse. Perhaps beginning with Rachel Carson's *Silent Spring* in 1962 and then followed by the emergence of environmentalist movements, public discourse was decisively shifted to include a persistent concern with the environment which has not dissipated even as debates on the types and extent of environmental dangers and the optimal forms for their solutions have shifted and expanded.

Over the decades such movements have articulated a range of concerns and demands, often characterised as democratically or globally essential. These have

included clean air, less pollution and less (hazardous) waste, challenges to how corporations and governments use or abuse natural sources, and how business activities (and concerns with profitability) have affected or damaged home or host community environments with toxics and pollutants. Thus concerns with forms of accountability, often framed as accountability to people or planet or democratic values, have proliferated, and have also frequently been articulated in, or translated into, accounting calculations and vocabularies. As environmentally friendly voices have come together within the political world in the same period of time[11], there are now, in advanced or 'first world' democracies, well established Green Parties[12], which have often achieved significant legislative results as well as ensuring the environment has a visible presence in government.

The emergence of new attitudes was arguably captured even forty years ago in the recognition of such discursive shifts as the replacement of a concern with living "standards" with a concern for "quality of life" (Ullmann, 1976, p.71) – a state of living which takes more facets of life into 'account'. A range of factors are typically seen as influencing the human 'quality of life' such as education, freedom (or 'human rights'), happiness, the physical environment, pollution, etc; however regardless of the specific factors invoked, there are grounds for seeing this change in discursive focus as the beginning of a "paradigm shift" (Ullmann, 1976).

[11] For example, one early environmental-political initiative was the United States domestic programme launched by President Lyndon Johnson in 1965, which was called the 'Great Society' and included objectives such as controlling waste products, conserving the environment, and restoring its natural beauty. For more information, visit: http://www.lbjlib.utexas.edu/johnson/archives.hom/speeches.hom/650208.asp (Accessed on 12/04/2015).

[12] For instance, the Green Party of England and Wales was founded in 1990 and follows such earlier formations as that of the People's Party in 1972 and the US Green Party whose roots go back to 1984.

Over-consumption of natural resources (which are mainly non-renewable) along with pollution of the environment are now widely recognised as problems facing society as a whole in this new era (or shifted paradigm). Increasingly scientific voices are predicting an end to human 'development' in the long term (and perhaps in the not so long term) if such 'development' is not rapidly redefined and carried forward in forms of genuinely 'sustainable development'. In any such move towards living in genuinely more sustainable ways, it has come to appear increasingly necessary that humans will need to extend the process that seeks to ensure accountability through forms of 'accounting' for pollution and other negative environmental impacts, whether in formulating specific 'solutions' or more broadly developing effective problem-solving approaches.

This is the context in which the field of environmental accounting has emerged as a distinct and significant area for basic research and applied technical or policy proposals, and has also developed as an aspect of an accounting concern with 'social responsibility'. Despite the difficulty in differentiating the terms 'polluted' and 'pure', or in distinguishing 'pollution' from 'purity' (Wildavsky, 1976), a significant network of researchers have come to engage with the act of 'accounting for environmental problems' with the aim of (a) generating environmental 'solutions' in order to move towards establishing a 'deep green' world and (b) showing how actual or potential threats to the environment can be rendered more transparent to the public through turning an accounting lens on those involved in polluting or anti-environmental activities and policies. Such research has already demonstrated in significant ways the potential that accounting has first to quantify and manage

environmental impacts and second to make corporations, governments and individuals more ‘accountable’ for anti-environmental actions.

Perhaps understandably, in the context where this research first emerged, environmental accounting researchers made early links between their emergent environmental concerns and the slightly earlier development of ‘social responsibility accounting’ as a discursive field from the 1970s (Tinker et al., 1991, pp.32-33; Gray, 2008). By the 1990s environmental accounting discourse was differentiating itself within this general field of concern (Gray and Laughlin, 2012, p.229), as researchers increasingly focussed on human-caused ecological and environmental problems as a distinct category of problems requiring distinctive forms of analysis, particularly as the problem field began to be seen in terms of the issue of ‘sustainable development’.

In the following section I propose to trace the emergence of environmental accounting as a development from within the area of social responsibility accounting, but as a development which, as it evolved, can be characterised as having two major streams or emphases: one focussed primarily on how or how far accounting may constitute a ‘solution’ to specific environmental issues: and another which sees environmental accounting as an aspect of, or indeed a leading player in, the development of a wider critical agenda for an expanded form of ‘social accounting’. At the same time, it is important to note that this ‘social accounting’ in its form as ‘Social and Environmental Reporting’ (SER) has been critiqued for too readily adopting the ‘social’ term in a way that has the effect of defining itself as

something other (and seemingly more hard-headed and realistic) than 'critical' accounting, which then becomes too easily seen as the preserve of "the *others, them* over there, that hive of unrealistic radicals who are not living in the real world" (Spence et al., 2010, p.85, emphasis in the original). This review bears that concern very much in mind, as it seeks to develop the space for its own form of critical theorising which may have purchase in that supposedly 'real world', while seeking to avoid the danger of compromising or undermining its commitment to radical critique.

2.2. From a 'Problem' to a 'Solution' via a 'Problematisation of Solutions'

In any would-be 'critical' approach to the interplay between accounting and the environment, the issue of "how accounting might contribute to the SD [sustainable development] debate" (Bebbington, 2001, p.151) has become a fundamental consideration. It has clearly informed the two streams or focuses of research that I consider next, which have each in their way approached accounting as means to providing 'solutions', or as part of effective 'problem-solving approaches' to man-caused ecological 'problems'. Reviewing the debates within and critiques of these research streams constitutes a first step in the process of formulating the particular approach and research questions to be pursued here.

2.2.1. Accounting: A 'right answer' environmental solution?

In this research stream, the application of accounting to generate solutions for environmental issues began with a set of practical or technical concerns, but also a general theoretical concern that the traditional approaches to accounting, whether

grounded in capitalist or Marxist sets of assumptions, were unlikely to make environmental issues sufficiently central to generate effective environmental solutions. In this respect the environment was seen as one of the "neglected aspects" (Ullmann, 1976) of society and life, which would fail to gain sufficient recognition. In western capitalism this would be the case because accounting typically operates to service "purely economic goals in the sense of profit-maximising" (ibid., p.72). But also this was likely to be the case in communist regimes, since under planned economies accounting was equally unlikely to (a) have a focus on solving environmental issues or (b) recognising the importance of ecological issues. Instead, it was the case that:

> "In the absence of a socially controlled economy, environmental concerns are marginalised – both in the Stalinist East and in the Capitalist West" (Geddes, 1992, pp.237-238).

Neither Marxist nor traditional accounting originating from Capitalism were therefore seen as likely to be capable of serving a 'deep green' society and achieving sustainable development. The former would fail to include environmental issues given its commitment to proving that 'state socialism' yielded better economic as well as political solutions than capitalism; and the latter, as key technology for measuring and enabling capital accumulation, was closer to liberal economics than to environmentalism (Gray, 1992; Wildavsky, 1994). Therefore the argument emerged that change would require "devising a social and economic system" (Pearce et al., 1989, p.1-2) and a radical/revolutionary paradigm shift, even though it might have seemed unrealistic:

> "The holistic radicalism of the deep green vision is such that anticipation of exactly how it might function owes more to day-

> dreaming than to reasoning. Thus anticipation of 'truly green' accounting is unknowable" (Gray, 1992, p.409).

At the same time it was recognised that, although "a cleaner environment is, in a significant way, a function of economic efficiency" (Wildavsky, 1994, p.462), this did not automatically mean that the roles of economics and accounting in constructing our world and shaping our business and political regimes would be significantly transformed (Gray, 1992, p.401). So, even though the aim of this dissertation is not to find out whether man's impact on nature is rooted in economics or accounting or both, it is important to recognise that there is a long tradition, within SER and beyond, of critique of accounting's inadequacies in "recognising the rights of 'invisible' stakeholders in the environment" (Rubenstein, 1989 cited in Rubenstein, 1992, p.505) and so resolving man-made environmental problems.

Environmental accounting has therefore also made connections to earlier research agendas (examples are cited in Ullmann, 1976, p.72) promoting modifications in accounting theories which may enable accounting to cover some of these 'neglected aspects' as a way to create a 'sustainable accounting' capable of also serving as 'accounting for sustainability'. The link to such agendas therefore led to raising the question of how critical accounting might intervene effectively. So Wildavsky has asked the question:

> "Will critical accountants become doctors for sick ecosystems? Or will they heal themselves first?" (Wildavsky, 1994, p.479).

In other words, there has for a number of decades been a range of calls demanding not so much 'evolution' as 'revolution' in the sense that accounting should be "becoming what it should be" (Hopwood, 1987, p.210) in terms of environmental

issues. Such calls have also indicated concern or dissatisfaction with the way accounting functions in relation to the environment, or briefly, "what it is" (ibid.) in ecological context. Therefore, not only is there a desire to want accounting to become "what it was not" (ibid.), but rather to become "what it should be" (ibid.). Therefore, one issue that emerges is whether accounting can operate as a 'right answer' form of environmental solution unless or until it becomes theoretically capable of serving environmental concerns through some form of 'revolutionary' change in accounting thought and systems.

A parallel concern focuses on how difficult such a change must be given the extent to which current capitalism-focussed forms of accounting are now embedded within corporations and increasingly, following the emergence of the New Public Management, within government and public-sector organisations as well. Within such an accounting 'frame', it is likely that those accounting statements which are made to account for environmental impacts and shape the contents of environmental reports will be compromised in terms of their impact or play a secondary role.

Finally, if a 'revolutionary' change in the focus and form of current accounting systems is to be articulated, under which nature would not be a 'neglected aspect' in accounting statements, what would such an alternative system look like, and how would it 'work' in any effective way? The engagement with such fundamental questions has arguably been a major factor in the emergence of the more theoretically ambitious approach to environmental accounting which has become known as Social and Environmental Reporting (SER) or more generically 'Social

Accounting'. I therefore turn now to consider this second stream in the Environmental Accounting literature.

2.2.2. 'Social Accounting': The universe of all possible accounting?

In this second research stream, there is a different story about the role of accounting vis-à-vis the environment which begins in the work, both singly and jointly authored, of Rob Gray. He suggests the idea of social accounting as "a universe of all possible accountings" (Gray, 2008, p.6) which covers all forms of "accounts which go beyond the economic" (Gray, 2002, p.687). By this proposed definition, accounting can constitute a system capable of capturing data from any field for any purpose. In other words, conventional accounting and green accounting are two subset accounting systems within social accounting.

Gray, along with co-authors such as David Owen and Keith Maunders, began focusing on developing the 'social accounting project' from the late 1980s. Their project revolves around the notion of 'accountability', understood both legally and morally (Gray, 2008). They have also employed a 'notion of acceptability' to reduce resistance to the approach across a broad spectrum of views, seeing this as a potentially acceptable 'concept' to provide a place where "the Marxist could talk to the Liberal" (ibid., p.7).

Gray has subsequently extended this search for a common ground through seeking to build his social accounting dialogue with others on the basis of the concept of 'democracy'. He has seen this as a way to open up a discussion on the central importance of organisations recognising their 'accountability' in regard to ranges of

issues where their actions have an environmental impact but where they may until now have escaped accounting for such issues in their formal reporting processes (e.g. issues such as employee rights, physical environmental impacts e.g. pollution, and community or customer impacts). He proposed the concept of 'democracy' as a common ground because:

> "Accountability turns out to be a pre-requisite for a democracy. Thus could 'accounting' be argued to be motivated by democratic ideals and to be an essential component of a democratic society" (ibid.).

Furthermore, he also argues that a formal absence of social accounting could imply that developed countries including Britain are anti-democratic, on the basis that conventional accounting needs to be problematised and challenged in terms of whether or not it meets democratic desiderata (ibid.). A major objective of the social accounting project has therefore been to promote moves towards a more participatory democracy by means of accounting (Gray, 1992, p.412). The means to this end is through a 'middle-ground' approach by which "the status quo is accepted … [where] the ambition is neither to destroy capitalism nor to refine, deregulate and/or liberate it" (Gray et al., 1987; Gray et al., 1988). Gray has therefore sought, so he has claimed, to deconstruct accounting and challenge taken-for-granted beliefs on conventional accounting in order to understand accounting better and reveal new angles on that (Gray, 2008, p.8).

More specifically, he maintains that, in order to build a society based on participatory democracy, more individuals need to be empowered to act as 'participants', and this requires rights to, and disclosure of, information: and as he

argued as early as his 1992 paper (Gray, 1992), currently existing information is not enough.

He therefore suggests that information capture requires a relevant accounting system which covers three main aspects of an organisation's performance – input, process, and output.[13] What he then proposes is the construction of an account of sustainability, putting the idea of sustainable cost calculation into circulation, by proposing two approaches. One is non-financial and is built on 3 categories of 'natural capital' recognised by environmental economists including 'critical natural capital', 'sustainable or substitutable (or 'other') natural capital', and 'man-made capital' (ibid., p.417-418). The other one applies a 'parallel accounting system' or 'shadow accounting system' which is built on the formation of a 'sustainable cost account'; this account calculates what level of funds should be spent to restore the natural capital to the position it was in before being used (ibid., p.419). By deducting the numbers produced by shadow accounting from the already calculated financial profit number, it redefines the 'real' profitability of an organisation, leading to the implication that many developed western countries have not made a 'sustainable profit' for a long time because, for example, the 'critical natural capital' has not been sustained (ibid., p.419-420).[14]

[13] I do not propose to review the system as a whole here. However, as an example, with respect to the physical environment, 'input' and 'output' information could include data about 'the use of natural resources' and 'production of waste and pollution', respectively (Gray, 1992, p.412).

[14] Although Gray predicted that this price-driven framework based on financial numbers might cause critical problems (Gray, 1992), it is arguable that his solutions through mirroring or extending conventional accounting forms of calculation serve to reinforce the dominance of conventional accounting thinking. So even if there is merit to his argument that neither Marxism nor capitalism is consistent with an environmentalism agenda, his attempt to link a deeper ecological agenda with accounting arguably fails to provide a robust alternative system thus leading towards a reformist

Taken as a whole, therefore, Gray's set of proposals form an impressive attempt to construct a system which will (a) enable accountants to account for and so potentially control or manage environmental costs (and benefits) more effectively, (b) raise awareness of the 'real costs' of environmental interventions within organisations and among outside stakeholders and interested parties, and so (c) make a reporting organisation/entity accountable internally and externally in terms of such key issues as how it has used or replaced natural resources and how it has therefore had impacts on our shared natural or physical environment.

This work has clearly been significant both in terms of agenda-setting for environmental accounting and because of its ambitious scope. However, in terms of the project being undertaken here, there are three points which seem problematic.

The first is a practical or tactical one. For instance, it is not clear how the recipient of reports and the information disclosed in them becomes a 'participant' in this participatory democratic society, or alternatively what the form of their 'participation' is likely to be. Supposing that one desired outcome is for recipients to become empowered to take part in environmental actions, it is not for instance automatically clear either what such actions should be or what type or quality of environmental outcome might result from them. What remains to be undertaken here is some form of analysis of the conditions under which the receiver of disclosed environmental information becomes involved in a participatory activity and how that

rather than revolutionary accounting approach. This would therefore leave unresolved the question of how it is possible to have environmental accounting and reporting within a capitalist system where the conflict between capital and nature is ignored.

activity may perhaps 'account' for environmental impacts and/or contribute to the environmental enhancement of a given organisation, community, and/or society.

The second is a more political, but also perhaps theoretical, one, concerning the limits of employing the middle-ground approach articulated in the social accounting project. Politically the approach has been criticised for a "political quietism" (Tinker et al., 1991) – as constituting a conservative political approach in which (a) the state is considered to have only a neutral, mediating role in resolving conflicts and so (b) any fundamental questioning of the status quo is absent, given the concern to avoid charges of extremism. But the rationale of excluding radical issues leads to a conclusion that "society-as-a-whole … is not overly concerned … about resource depletion, the power of business … business marketing and the status of labour" (Gray et al., 1987, cited in Tinker et al., 1991, p.30).

Arguably that is no longer the case given the number of people and groups globally who have become concerned about nature and man-caused environmental impacts. At the same time, the charge of political quietism has a theoretical sub-text. For Tinker et al. (1991), the theoretical concern was a failure to engage with the radical potential of Marxist understandings of accounting. But the argument has equally been made, as for instance in the quotation from Spence et al (2010) given above, that the approach has led to a more widespread systematic silencing of critical voices.

The third possible objection concerns the adequacy of the notion of 'accountability' which is at the heart of Gray's social accounting project. Accountability, as Spence

et al note (2010, p.78), is defined as a two-sided notion which embraces both issues of corporate responsibility and issues of transparency concerning corporate environmental impacts. Insofar as there is, as Gray argues, a 'democratic demand for accountability', it is important to consider how far businesses (and now also, as noted above, many governments or public sector organisations) meet this through adequate information recording and reporting techniques for demonstrating that their actions are responsible and demonstrating that their reports are transparent.[15]

These objections are not necessarily fatal to the Social Accounting agenda. At the same time, they indicate the scope for development of a range of 'critical' forms of analysis which may offer ways forward for the implementation and analysis of environmental accounting, with both practical and theoretical potential benefits. I therefore turn in the next section to ways in which this review of the literature may enable the formation of a viable yet critical research question.

2.3. Towards the formation of a new research question

In a study such as this it is important to limit the empirical scope of what will be researched, even as one seeks to develop an appropriate theoretical framework. In this regard, there are two particular areas of research focus within the environmental accounting field which may enable an appropriate 'bottom-up' form of critical

[15] In my study here I adopt an approach to evaluating such techniques through a focus on how far the use of CSR-oriented reports meets these concerns, through reviewing studies which have analysed the quality and accuracy of environmental reports and CSR-oriented documents. This is proposed as a way of providing a first level of answer as to whether or not corporations are attempting genuine transparency over, and perhaps responsibility for, their environmental performance. It also is one more way of seeking to develop a critical awareness of issues which have perhaps been under-researched but which need to be taken into account in formulating adequate research questions.

analysis (in the sense developed in Foucault's work and in the recent re-readings mentioned above seeking to take up that form of analysis from him).

On the one hand, it matters to analyse Report Preparers within their organisational context when they are engaged with a range of activities and practices to meet their environmental agenda. On the other hand, and adopting a narrower focus, it also matters to study the interplays between RPs (as thinking, acting, and strategising human subjects) and the accounting-based environmental practices which they apply and implement to generate environmental truths and solutions. By analysing these two areas and bringing them together, this study seeks to form a research question which critically problematises and studies the roles and functioning of accounting in environmental spheres through a bottom-up approach.

2.3.1. Report Preparers (RPs) in organisational context(s)

The focus here is on the role of "Report Preparers" (RPs) who operate as the first or base level technical experts developing and refining (a) the detailed categories in which environmental accounting data will be recorded, (b) the accounting and information systems for recording the data, and (c) the actual environmental accounting information for incorporation into corporate annual reports, including (but not limited to) CSR formats. Their work forms the basis for all the higher-level or aggregated forms of corporate environmental reporting and disclosures, which present the environmental status of the company – covering information such as environmental objectives, failures, and successes. Therefore a focus on RPs can promote the kind of bottom-up approach this study seeks to implement, while also

enabling a focus on accounting discourse and practices, since these are integral to the work of RPs, many of whom are additionally qualified accountants.

At the same time it has to be recognised that the information they generate will often be subject to various forms of re-analysis and perhaps selective presentation at these higher levels – such re-writings being integral features of the successive phases of the corporate environmental accounting procedure. Deegan and Rankin (1999), for instance, surveyed the experience of report readers and RPs by applying a questionnaire method to study the 'expectations gap' between the demand and supply of environmental information and found out that such a gap does indeed exist, although in that case they found that it is smaller in the mining industry than others.

Clearly RPs are located within organisational contexts where environmental issues will be treated in a range of ways, from strong positive commitment across the organisation to transparent and objective reporting to situations where there are conflicts and uncertainties over the 'political acceptability' of their analyses. At the same time, whether the size of this gap is affected by the nature of industry or not, the way in which RPs engage in the 'truth game' of environmental reporting, and how they interpret such constructs as 'transparency' and 'accountability', are issues of particular interest given their 'base-level' role in constructing the environmental accounting 'statements' which will form the core, however they are subsequently amended, of an entity's published reports.

Issues such as the level of environmental consciousness, awareness, and commitment among RPs are of interest, for example, and how such factors might affect what they write and how they write it (and whether RPs may engage in some level of 'self-censorship' thus contributing to any gaps between the supply of and demand for information). On the other hand, insofar as there continues to be a significant interest within companies to employ "green employees" as noted by Huizing and Dekker (1992, p.447), such gaps may possibly be decreasing or changing in form. The emergence of reporting rules and principles promoting 'good practice' or standardising environmental accounting[16] and disclosure techniques may also have a material effect. Taking such contextual and organisational factors into account is therefore important: at the same time doing so just reinforces the potential importance of researching the role of accountants and other RPs, as subjects, in shaping what gets into corporate (environmental) reports.

Other research into environmental reports also signals the importance of focusing on RPs, as human subjects who write and disclose environmental information. In this regard, one early study signals how far corporate environmental reporting has moved from the early phases of its growth, when it was a "principally voluntary" practice with no agreed principles or procedures (Wiseman, 1982, p.53). The extent to which practice has moved from a 'voluntary' to a 'mandatory' basis, particularly with the emergence of environmental accounting standardisations, as regards corporate environmental impacts and disclosure will be explored further in Chapter 4.

[16] In IFRS terms

However, it is worth noting that even longer ago environmental reports were being criticised as being "self-serving" or having a "defensive character" in support of companies' interests (Dierkes and Preston, 1977), given that such claims remain widespread today. Issues such as corporate lack of transparency and accountability, and the degree of self-censoring or self-regulation by subjects in key roles such as RPs therefore remain very much 'live issues' for investigation. Of relevance in this regard is the development within the field of disclosure studies which seek in various ways to evaluate the quality and accuracy of environmental disclosures in environmental reports. Analysis of the choice of vocabulary and the rhetorical 'tone' found in environmental disclosures continues to suggest that:

> "…corporate environmental disclosures of poorer performing firms appear to emphasise good news, obfuscate bad news, and slant attributions of performance to their advantage in an attempt to manage stakeholder impressions of their corporate environmental performance*"* (Cho et al., 2010, p.442).

This does not mean that disclosures may not still include pieces of "meaningful" information as hypothesised by Patten (2005). However, when he evaluated environmental disclosures by examining projections of future spending for pollution abatement and control equipment, he concluded that disclosures are less than transparent, since "projections may be more misleading than meaningful" (Patten, 2005, p.457). This suggests that there perhaps remains an endemic resistance to transparency, given that Wiseman (1982) also came to the conclusion that environmental disclosures were "incomplete" and "inadequate" whilst disclosure length bore no relation to environmental performance, nor was the disclosed measurable information relevant to actual environmental performance – a conclusion

which reconfirms lack of transparency. But while Wiseman (1982) attributed the weak quality of environmental disclosure to the 'voluntary' nature of environmental reporting, the persistence of this lack under a more mandatory regime suggests that this explanation is inadequate.

There are similar studies which have suggested homogenous results, such as disclosing only positive environmental impacts (Knoops and Pupping, 1990 cited in Huizing and Dekker, 1992, p.444) and enhancing legitimacy by increasing the amount of environmental disclosure (Patten, 1992). This (a) implies transparency not for the sake of transparency but for legitimacy desires and (b) strengthens the significance of the subjects' role in the implementation of environmental accounting and disclosure practices, and consequently the notion that environmental disclosures are self-serving and defensive and with no unified and compulsory framework for corporate environmental reporting.

At the same time, employing 'legislative authority' and 'governmental power' to enact 'environmental legislations' and execute them across the specified territory – local, national, international, and (hopefully) global – has become a route to construct a supposedly solid framework for improved corporate environmental reporting (Knoops and Pupping, 1990 cited in Huizing and Dekker, 1992, p.444), something I shall return to in Chapters 4 and 5). But again, earlier research had already indicated ways in which legislation and regulation in the CSR field might be necessary but are never sufficient:

> "…the French experience with corporate social reporting has taught us that pre-law experiments were much more informative and

> promising than post-law practice, which companies only complied with the legal requirements and did not go one step further" (Vogelpoth, 1980 cited in Huizing and Dekker, 1992, p.445).

Perhaps unsurprisingly, research has continued to focus on the various gaps between theory and practice, or perhaps formal aspiration and actual outcome. Thus the ways in which corporations have publicised their environmental disclosures have been seen as re-inforcing the 'self-serving' and 'defensive' characteristics of environmental disclosure and reporting. Research has shown how disclosing environmental information can help organisations to "manage public impressions" favourably and boost reputation (Neu et al., 1998, p.279), so potentially generating a new source of competition among businesses, i.e. being (or pretending to be) greener than others. However, it is also recognised that companies, as social networks, are made up of individual employees. So, defining a company as green does not necessarily mean that its employees are equally green (and vice versa). Also, if companies are at different levels of 'green-ness', we reach the position that converting environmental accounting standards into practice differs both from company to company and within companies, because individual people with different levels of green commitment are likely to be implementing environmental accounting practices in different ways.

A further research approach has investigated the level of disclosed environmental information by RPs from a cultural perspective. Results have generally shown that national cultures have positive effects on the level of disclosure (Orij, 2010; de Villiers and van Staden, 2006). This suggests that, within the construct of 'culture', there may be some concealed factors that affect both the level of transparency and

environmental commitment of RPs. In other words, local cultural factors can influence the practice or organisation of RPs.

At the same time, bottom-up research may feel a need to move below or beyond the 'culture' construct. Studying practices and subjects at a micro-level provides an opportunity for understanding such constructs (more) critically, because it includes a focus on accountants and other human 'subjects' involved in RPs as active sense-makers not just as culturally shaped agents, who therefore can "act locally and think globally on ecological issues" (Maunders and Burritt, 1991, p.24).

Variety in disclosed information reinforces the possibility of self-regulation for implementing environmental accounting practices at a local level. The occurrence of this self-regulation to record and report environmental performance arguably remains likely because accountants (and arguably RPs more generally) have, through their professional expertise, the potential capability to contribute technically to environmental accounting disclosure (Bebbington and Gray, 2001; Herbohn, 2005; Owen, 1992), and an additional potential role as providers of recommendations, based on their expertise, to senior management on appropriate ways of conforming with disclosure rules (Huang and Kung, 2010).

On the other hand, the 'non-similarity' of CSR reports across companies, business sectors and jurisdictions (Perrini, 2006), makes difficult the comparability, qualifying, and verifiability of reports, including verifying the accuracy of their basic information (Beets and Souther, 1999; Kolk, 1999; White, 2005). This suggests another way to explore in which RPs may (or may not) be exercising self-regulation

or self-censorship, through perhaps anticipating what top management want (they believe) to hear, as they undertake the environmental accounting process, so perhaps actively helping companies to claim they are more 'green' than others or more committed to rigorous environmental accounting and disclosure practices, even though this may not be the case.

There are other factors to take into account. First the act of preparing corporate environmental reports can be (1) compulsory or voluntary; (2) presentation can be based on mandatory predefined framework or on the subjective preferences of each organisation's internal decision makers; and (3) reports can be presented in narrative format or numerical style. However, as implicitly shown above, there are potential side effects (positive or negative) of environmental reporting and disclosure practices. Having environmental policies with accompanying measuring-reporting practices can boost the commercial profitability of a company by (a) acting as an "effective marketing tool" (Huizing and Dekker, 1992, p.437) to broaden the social basis for the company by improving or "facilitat[ing] the construction of a new and different image of the company" (Hopwood, 2009, p.437), and (b) attracting "lower insurance premiums, lower taxes and (insurance) claims, and all kinds of licences, subsidies, bank loans and insurances, … [and] consumers who increasingly prefer environment-friendly products" (Huizing and Dekker, 1992, p.437).

There is also the issue of legitimacy, which is not only related to the above issue but also brings in new issues such as sustainability assurance (O'Dwyer et al., 2011). Of interest here is the potential impact of annual report environmental disclosures and

environmental press releases – two common information dissemination channels – as legitimation tools (Aerts and Cormier, 2009), plus the role of environmental disclosures as tools of legitimacy (Cho and Patten, 2007), and the issue of whether reduced disclosures may act as a legitimising strategy (de Villiers and van Staden, 2006) – i.e. a reduced-transparency approach to increase legitimacy.

All the above studies manifest the presence of what Hopwood (2009, p.437), has suggested: namely that in spite of "apparent openness" there is the possibility that environmental reports act as a "corporate veil" to "reduce what is known about a company and its environmental activities". Therefore, there are strong grounds for concluding that environmental disclosures need to be read with caution, since often such disclosures and the CSR-oriented reports that contain them are neither for the sake of being transparent nor to satisfy the democratic demand of right to information. Moreover, when the demand of transparency as the minimum level of accountability (Spence et al., 2010) is not met, it implies that corporations have not been environmentally responsible and then have tried to hide truths about their environmental irresponsibility. Therefore, it can be concluded that there is widespread and consistent evidence indicating that corporations have not been environmentally 'accountable' – a conclusion which undermines the kind of aspirations expressed in the Social Accounting project, which were based on the possibility of establishing shared or coinciding interests between the major participants or interest groups.

Although the reasons for this are no doubt multiple, researchers including Hopwood (2009) have commented on the lack of a "will to act" on sustainability within the political and business spheres, as the basis for then investigating more closely why this reluctance exists, and not least at the corporate level.

One type of investigation focussed on this issue has produced studies (e.g. Burnett and Hansen, 2008; Clarkson et al., 2008; Al-Tuwaijri et al., 2004), which have looked into whether improving environmental performance has a negative impact on other factors such as business and economic performance, by focussing on the interconnections between three factors, environmental performance, economic performance, and (the level of) environmental disclosure. However, a bottom-up approach may complement this kind of work by looking into the 'nuts and bolts' practices of RPs, thus posing the question of 'how environmental accounting and reporting are implemented that such practices have neither (a) satisfied the democratic demand of accountability nor (b) stimulated the 'will to act' green'.

Researching this question may also then address one of the important questions raised by Tinker et al (1991) and rearticulated by Spence et al (2010): namely "how such processes of accountability might come about and what they might lead to" (Spence et al., 2010, p.78 referring to Tinker et al., 1991); the possibility is raised here as one possible way of enabling the practice of green accounting and reporting to move towards the objective of a genuine green accountability. In other words, instead of investigating whether existing disclosed environmental statements are true or false, we might move below or beyond the level of accountability outcomes to

focus on ‘the process of environmental accounting and reporting’ through studying how the accounting statements involved in that process are produced and disclosed by RPs – i.e. engaging with them as human subjects who, in a given historical time and place, engage, as active sense-makers, in the ‘truth game’ of producing environmental statements.

Moreover, following this question potentially provides the opportunity of critically analysing “the way in which corporations behave … [and] the concrete political struggles of groups other than corporate management” (Spence et al., 2010, p.77). The focus on the ‘political’ dimension of the action (and arguably therefore of speaking and thought) of groups and the individuals who make them up is an important dimension to factor into a bottom-up analysis. In this particular piece the focus is on the extent to which the theoretical perspectives employed by social/environmental researchers – e.g. Stakeholder, Legitimacy, and Marxist Political Theories, which in conjunction with an accountability focus have acted as nodal points structuring SER discourse – manifest similarities to the ‘cargo cults’ of South Sea Islanders.

Thus the latter, as meaning-making human subjects, gave certain objects contained in the cargos washed up on their shores meanings and functions which were systematically different from those they had in the world from which they came: or as Spence et al (2010) put it, “the origins and significance of those goods were considered from a perspective that took very little cognisance of outside knowledge” (Spence et al., 2010, p.77). Whence they then argue: “In a similar fashion, SER

distances and closets itself from other organisational literatures and the social sciences generally": so even though SER is concerned with wider social change, in effect it functions, despite itself, as a form of "cargo cult science" (Spence et al., 2010).

Their argument is centred on what they see as the absence of a 'political' dimension in SER studies which considers both macro-level (e.g. the levels of state and corporate power) and micro-level (e.g. how the exercise of power operates at or below the level of 'the individual') perspectives. Neither has the micro perspective (i.e. Stakeholder and Legitimacy Theories) clarified "the role of the state and the structural influence of large corporations", nor are "macro issues of power" engaged with in SER discourse when Political Economic Theory is applied (Spence et al., 2010, p.85). Therefore, they suggest that an approach which may embrace both micro and macro levels of 'the political' simultaneously in one study may provide new opportunities to analyse environmental accounting and reporting (Spence et al., 2010).

Thus, in their view, both the 'revolutionary' and 'reformist' approaches found in the two major streams of SER work discussed above fail to engage with the 'political' in the micro-level sense articulated by Laclau (e.g. 1990; 1996; 2000; 2005) and Laclau and Mouffe (1985), which argues that "the basic precondition of political action is antagonism" (Spence et al., 2010, p.78). The forms that such antagonism will take in particular times and places will necessarily vary, but to omit the principle of antagonism from one's consideration of what are political and contested issues is to

empty out the analytical potential of one's theoretical approach. Thus SER work has failed to have the effects it has hoped for, since, as approaches, "both reform and revolution leave us with societies where antagonism is essentially absent or managed out of the political sphere" (ibid.).

Instead, Spence et al. (2010) propose that social/environmental accounting researchers arguably need to integrate a more 'political' form of analysis working across the micro- to the macro- level (and back) in their studies. In the approach pursued here, this suggests seeking to begin from a departure point which accepts that 'antagonism' is integral to both the playing of 'truth games' at the level of discourse and to the process of 'acting on the actions of others' at the level of practice.[17]

Such an approach is therefore arguably one that fits very well with a bottom-up approach of the kind pursued here; it also potentially is alive to the dangers signalled more recently in a paper where Spence, with other co-authors, warns against forms of theorising the interplays between accounting and the environment which fall under the Bourdieu category of 'doxa', i.e. constituting a form of thinking which "makes its own arbitrariness seem natural and produces a committed and

[17] So one implication is as follows. If we think of accounting in conventional (i.e. capitalist) terms and therefore conclude that conventional accounting is fundamentally in conflict with a concern for nature and so a *revolutionary* change is the solution, then we should not expect that a revolution involving a Marxist turn would constitute such a solution, since contradiction is supposedly overcome and so the society constructed on the basis of Marxism is free of antagonism. On the other hand, if we think we can start from the *status quo* and then effect gradual *reformist* social change/reform through increasing environmental accountability and decreasing man-made environmental impacts, then we need to remember that "the adoption of the term 'social' itself is indicative of a retreat from anything overtly antagonistic" (Spence et al., 2010, p.85). At the same time, Spence et al note that this approach through the work of Laclau is 'not the only way forward' noting that 'there have been many criticisms of his work that need to be taken seriously' (2010, p.85).

unconscious commitment to the established order" (Spence et al., 2013, p.470). The focus on thinking (and its relation in Bourdieu's formulation to *habitus*) is similar to that pursued by Foucault, as echoed in his chosen title at the Collège de France of 'Professor of the History of Systems of Thought'. In his case thought has an integral relation to a historically formed 'experience', and 'experience' is what constitutes the ground of our speaking and acting in a given time and place.[18] But even if the emphases are slightly different, the focus on thinking and 'systems of thought' as the starting point for understanding us and our varying historically shaped worlds is a way into seeking to analyse the relation between micro- and macro- levels of events and actions.

2.3.2. Interplays between RPs and environmental accounting as Critical Project?

Before starting this section it is noteworthy to mention that although this dissertation is focused on the environmental role of accounting, in the above sections it is generally discussed by referring to social/environmental accounting and reporting or SER. The reason for combining the 'social' with the 'environmental' in the above is that such has been the general terminology found in the papers and critiques that have made up this research field. Therefore it seemed appropriate to reflect this terminology across the preceding sections of this literature review. But additionally it

[18] Foucault specifies what he means by 'experience' in his 'Preface to *The History of Sexuality*', (Foucault, 2000c, pp.199-205): it is not for him purely 'lived experience' but what is produced through interplays of (i) the forms of knowledge and (ii) rules of conduct one is born into and out of these (iii) a mode of relation to the self: as he puts it concerning the experience of 'sexuality', this is 'the correlation of a domain of knowledge (*savoir*), a type of normativity, and a mode of relation to the self (Foucault, 2000c, p.200).

was important to ensure that the formation of research questions, going forward, would faithfully reflect and take into account the range of 'things said' in the field – just as it is also important to draw on critiques which have pointed out the limitations or 'silences' produced by the way 'the social' has generally been put to use in the major streams of 'social accounting' and SER.

In the light of such critiques, the focus here, going forward, will be more on how accounting acts as an 'environmental' technology, with no automatic assumption that there is a 'social' dimension to such action in the sense articulated for instance in Gray's construct of 'social accounting'. For the above review has led to the following provisional conclusions.

First there has been a certain kind of unresolved tension within the more technical or technicist stream of environmental accounting research: such work has for the most part sought to implement new accounting techniques or systems within existing economic regimes: but this has meant working within capitalist or profit-focussed parameters where environmental issues and 'nature' are of secondary importance: research suggests that organisations across recent decades too often paid lip service to environmental goals or sought primarily to ensure a green image, in processes now widely summarised as 'greenwashing'.

Alternatively, the Social Accounting project has sought to shift the *status quo* through a reformist approach which will shift the terms of practice while also empowering readers/recipients of environmental accounting information to become participants. But to date, it appears that these more 'radical' attempts at promoting

environmental accountability have also been unsuccessful, so that environmental reporting often acts as a "corporate veil" (Hopwood, 2009, p.437).

In this situation, there is arguably scope to seek to develop forms of 'critical accounting' which may have purchase on what takes place from the ground up in the generation and construction of green accounts and environmental reports, particularly given the cases that have been made arguing that reformist approaches fail at a theoretical as well as practical level (e.g. Spence et al., 2010; Spence et al., 2013). Insofar as there has been a lack of 'transparency' and failure of a 'will to act' – so that accounting and disclosure practices are not applied to create a greener, cleaner planet but rather with the aim of increasing corporate financial gain and bolstering the interests of capital – the proposal here is to adopt a 'bottom-up' approach which may enable a more 'critical accounting' to gain purchase, through focussing on the work of those who operate as Report Preparers (RPs), and in particular on how subjects occupying the role of RPs within organisations engage with environmental accounting and disclosure practices, and how far they constitute themselves as environmentally committed or conscious subjects as they engage in what and how to write as RPs.

In so doing it is important to learn the lessons of environmental accounting's failures without presupposing that existing techniques must inevitably fail. So while acknowledging that accounting may not have been a perfect technical device with no side effects in controlling environmental harm, e.g. by presenting environmental matters in inappropriate quantitative ways (such as assigning monetary value to

ecological issues), or being a vehicle for drawing the 'corporate veil' in narrative disclosures, such failures (or side effects) should not necessarily lead to the conclusion either that accounting is endemically unable to solve environmental problems or that such undesirable consequences represent the best that accounting can do in solving ecological issues. In this regard it is worth recalling that "…a law of economics that has been much neglected is: 'goods and bads tend to be jointly produced'" (Boulding, 1982 cited in Gray, 1992, p.403): or in other words

> "…(virtually) everything that does good also does harm. If harms were reasons for stopping things, for instance, no hospital in the world could stay open due to the prevalence of iatrogenic (hospital-caused) disease" (Wildavsky, 1994, p.479).

Therefore, this study considers that the following suggestion by Mathews still holds good (Mathews, 1997 cited in Henri and Journeault, 2010, p.74): namely that environmental accounting as a field of study "must lead to action and change in the relationship between business, the stakeholders which make up society and the environment which we need to support us all". Of course it remains uncertain 'how' and 'how far' accounting can do this whilst there are opposing debates in the literature which (a) imply doubts about the capability and compatibility of accounting for environmental purposes and (b) continue to uncover undesirable side effects (whether intended or unintended) of corporate environmental accounting and reporting. However, two questions can still be asked: first, 'How can accounting do *good things* in favour of the environment and make contributions to sustainable development?': and second, 'Why is accounting increasingly in demand to solve and manage environmental problems?'.

As a first answer to these questions, it is proposed to seek, in a sense, to stay at the surface of accounting practice: first in the sense of considering how both management accounting (MA) and financial accounting (FA) practices together function and interplay to construct 'green accounts', rather than seeing these as distinct categories with separate spheres of activity and influence: and second in the sense of considering the products of MA and FA interplays not as decontextualised or disembodied 'reports', and so focusing specifically on "reporting alone" (Spence et al., 2010, p.85), but instead considering these products in terms of "systems which generate 'green reports'" (Power, 1997, p.135). Too often, it has been noted, CSR reports look like a "big black box…[where no one can] see what is going on in the box" (Herbohn, 2005, p.531); or to borrow O'Dwyer, Owen, and Unerman's (2011, p.33) terminology for assurance practices, there has been insufficient attention paid to "how the 'back-stage' of … practice is constructed by practitioners", which is an integral systemic aspect of generating green reports.

Therefore in order to respond to calls seeking "to explore the role and functioning of accounting in the environmental and sustainability spheres" (Hopwood, 2009, p.439), further research is required to (a) unlock the 'black box' of environmental reports and (b) shed more light on the 'back-stage' of environmental disclosure and reporting, in terms of (a) what accounting (as generator/producer system of green solutions/statements) does to boost environmental developments, (b) 'how' and 'how far' it does it, and (c) 'how' practitioners are playing their role in constructing these practices.

Therefore, to look at the 'back-stage' of environmental reports where I can explore the role and functioning of accounting and the way in which RPs are composing environmental statements I wish to ask "how and how far are environmental accounting and disclosure practices are implemented by subjects?" By investigating the answer of this question I can study the process of reporting – the process throughout which RPs are acting as 'sense-makers' or 'truth-tellers' about their environmental performance. At the same time, considering FA and MA practices (and statements) together makes sense since RPs, in their sense-making and truth-telling, constantly have to do precisely that, in the process of generating reports some of which will have an internal and others an external focus.

Therefore, this study proposes that two things are required to understand the increasingly growing and complex area of environmental accounting: (a) addressing accounting issues that go beyond and across FA-MA differences, and (b) recognising how accounting as a practice actively shapes reality. It is essential to look at the role of environmental accounting in ways that go beyond the conflicts and differences between FA and MA. Therefore, examining environmental accounting practices across both arenas in one enquiry provides the opportunity to expand further the collection of "determinants" of environmental accounting use (Ferreira and Hendro, 2010, p.940).

Finally, 'qualitative' fieldwork-oriented accounting studies in the environmental context are still relatively rare. Therefore, examining environmental accounting practices by this method "may also be an opportunity for meditation and reflection –

an opportunity to search for new truths and meanings" (Gallhofer et al., 2000, p.391). A focus on the work and 'lived experience' of RPs constitutes a way of looking at the back-stage of CSR-oriented reports. It is also arguably, retaining the theatrical metaphor, to observe the first stages in the 'performance' of the 'statements' that will go to make up 'CSR' or other 'environmental reports'. In this regard, RPs are human subjects who act as 'players' both back-stage (at the time of getting prepared for performance) and then on-stage (at the time of performance). They have as 'audiences' all the 'readers' or 'recipients' of environmental statements, external as well as internal to the organisation. Research such as this may open up to all such audiences some aspects of the otherwise mysterious back-stage where the RPs rehearse and polish their 'act'.

Hence, following this approach gives me the opportunity of not "looking at corporate reporting in isolation from corporate practice" (Spence et al., 2010, p.85), through a form of qualitative fieldwork built on a mix of archival analysis and observation. I adopt this approach as a complement to the increasing range of work in recent years which has undertaken forms of rich description and theoretically-informed analysis based on fieldwork-based studies, as well captured by the fact that the first edition (2007) of the collection *Sustainability Accounting and Accountability* has now been followed by a significantly expanded edition (Bebbington et al., 2014). This work has come to draw upon a diverse and rich range of approaches, clustering around a range of themes and making various methodological choices, as is well summarised in the charts developed in Ian Thomson's chapter in this latest volume, 'Mapping the

Terrain of sustainability and accounting for sustainability' (Thomson, 2014, pp.15-29).

Thus we can safely conclude that the field has moved beyond the situation a decade or so ago, when the case could be made that the majority of previous studies had contributed to the literature through 'quantitative-oriented' investigations usually approached through a 'positivistic' path, where "the absence of field work…. is striking" (Gray, 2002, p.697). At the same time, the argument here is that the case can be made for adding to the richness and diversity of the qualitative work now being undertaken through a theoretical-empirical contribution grounded in the kind of revised Foucauldian approach currently being developed, as briefly indicated in the Introduction to this chapter above.

Theoretically, this approach can arguably contribute through its focus on a form of 'bottom-up' analysis concerned with making visible how specific micro-level accounting statements (which may include both management and financial accounting aspects) can interplay with particular practices undertaken by RPs to promote or enable 'green accounting' initiatives. Empirically it shines a light on a set of knowledge experts and their ways of thinking and acting who have not been 'centre stage', it appears, in fieldwork activities before. It therefore signals that there is perhaps potential to contribute to the field of environmental accounting through a qualitative fieldwork-oriented empirical study which has a particular Foucauldian 'take' on how to engage in a '*critical*' investigation of existing and emergent

research questions, through a bottom-up approach to operationalising such questions and the development of a methodological framework to match.

Thus, what I propose to investigate in the next section of this review is how to implement such an approach through looking at accounting practices beyond the conflicts or differences between FA and MA at an empirical level through a qualitative lens, within fields where individual subjects are constructing (social) reality – thus adopting a subject position which has arguably not been taken by previous environmental accounting researchers. Seeking from this subject position to drill down more to the level of practices, I ask 'how and how far are accountants and other practitioners/RPs implementing environmental accounting in practice and generating environmental information?'

Therefore, this research seeks to focus on *practices in action*, and in particular those accounting practices relating to environmental interventions, but also on what accounting statements get made in the course of engaging in such practices in action. Thus it hopes to develop a distinctive answer to Bebbington's question quoted above: namely "how accounting might contribute to the SD debate" (Bebbington, 2001, p.151).

2.4. Foucault's bottom-up approach: An alternative way beyond 'cargo cult' environmental accounting?

As noted already, this enquiry aims to investigate the answer of 'how and how far is environmental accounting adopted and how is its implementation made to happen?', as its contribution to seeking "to explore the role and functioning of accounting in

the environmental and sustainability spheres" (Hopwood, 2009, p.439). To operationalise using a 'critical' rather than 'social' lens, it proposes an approach that seeks to uncover the interplays between 'discourse' (as what gets said and written as and around environmental accounting) and 'practices' (as what shape the thinking, discoursing and acting in this arena). It therefore proposes to combine field-work observation with analysis of 'archives' (i.e. what persists across time as the writing and speaking of and around environmental accounting). It is in this context that this study proposes to draw in particular, for its critical approach, on the work of Michel Foucault.

Furthermore, as noted at the start of the chapter, it draws upon the kind of approach developed in recent work (e.g. Paltrinieri, 2012; Webb, 2013; Hoskin, 2015) which seeks to take up Foucault's own stress on the importance of *combining* 'archaeological' analysis (of statement 'archives') with 'genealogical' analysis of practices (and particularly the practices shaping how human subjects in a given time and place think, act and articulate statements in particular 'discursive regularities').

However one question that has to be put is whether the move to using Foucault in this way is an appropriately 'critical' approach: or is it, taking up the metaphor used by Spence et al. (2010), just another 'cargo cult' form of theorising? This section therefore seeks to set out in more detail the form and scope of the approach to studying human thinking and acting developed by Michel Foucault as both a historically *and* a philosophically informed analysis of discourses and practices.

Foucault, from his first major work, *The History of Madness*, originally published in French in 1961 (Foucault, 2009b) and onwards throughout his work, makes it clear that he begins from the level of human thinking as historically constituted in different eras, and how thinking shapes, and is shaped by, what we say and do as 'experience', which is itself also therefore always situated within a given 'historical' frame of reference. [Thus in *The History of Madness*, the thinking and the experience with which he is concerned is that of those who become, in the 17th century, constituted as 'mad', and how then in the 19th century, although still 'mad', they become subject to regimes of cure in 'asylums', rather than confinement in prisons. Thus there are two historically distinct forms of 'experience' for the mad, and the second does not follow or develop in any direct or 'logical' way from the first; and experience here for Foucault is historically constituted out of a relation to modes of conduct, ways of knowing and forms of relation to the self (see footnote 18 above for more on Foucault's reflections on 'experience').]

There is a wide range of work, both in accounting and management, which has drawn in various ways upon Foucault's insights. Much of this has been done from within a sociological framework, as most conspicuously with the work of Peter Miller and Nick Rose on 'governmentality' (e.g. Miller and Rose, 2008) and in the associated work, undertaken more specifically in accounting, which Peter Miller co-authored with Ted O'Leary (e.g. Miller and O'Leary, 1987).

This is an important strand of work in its own right. However, Miller and Rose themselves state, in their Introduction to *Governing the Present* (2008) which

reviews their approach and work over the previous three decades, that in their approach they 'preferred not to be Foucault scholars'. Instead, they say: "we adopted some of the terminology and concepts sketched out – no more – by Michel Foucault in his brief writings on 'governmentality'. We picked and chose, added ideas and concepts from elsewhere, made up a few of our own…." (Miller and Rose, 2008, p.9).

Where they do very much follow Foucault is in developing a focus on the 'subject' and also on the 'events' that subjects are engaged in, particularly the conditions that set up such events – what they call their 'eventalization' – thus 'making visible a *singularity* at places where there is a temptation to invoke a historical constant'.

They also therefore have a focus on the interplays between a historically given 'mode of subjectivisation' and its reciprocal 'mode of objectivisation', and so on how subjects are historically constituted, as in Foucault (and as also, hopefully, here).[19] Work like that on 'the governable person'(Miller and O'Leary, 1987), and on how workers are constituted as subjects and coordinated within governable work cells at Caterpillar (Miller and O'Leary, 1994) implements this approach in memorable and much-cited ways.

However, the focus is primarily sociological, and so on the *social* manifestations of forms of governing, and particularly 'governing the present'. So less attention is

[19] So they do not begin from 'some explicit or implicit assumptions about human mental processes' (2008, p.7). Instead they focus on 'the historical forms taken by those presuppositions', and so with 'what conceptions of the human being – whether as citizen, schoolchild, customer, worker, manager or whatever – were held at certain times and places and by whom, how such conceptions were problematized, and how interventions were devised that were appropriate to the object that was simultaneously a subject'.

given to how subjects construct *statements* as they engage in the playing of 'truth games' and more to the *practices* through which they are rendered 'governmentalised'. Particular attention is given first to 'rationalities' or 'programmes' of government (defined as 'styles of thinking'), and second to 'technologies' (which enable 'authorities to imagine and act upon the conduct of persons individually and collectively') as the devices which link ways of knowing and forms of exercising power (Miller and Rose, 2008, p.16).[20]

Thus 'thinking, acting subjects' are necessarily implicated in the knowledge-based exercising of power. They engage in rational 'styles of thinking' in order to make themselves into the 'authorities to imagine and act upon' conduct. At the same time, the focus is principally on how the technologies and rationalities produce governmental or managerial outcomes on *populations* of subjects as objects. Thus this is an important form of analysis but it appears to differ in two significant ways from that pursued here.

First, since it is essentially sociological, it does not begin below the level of the social with a 'bottom-up' approach to the problems of the relations of thinking, knowing and acting. Second, the approach is in the tradition of treating Foucault's work as a 'tool box', as indicated by their observation that they "picked and chose, added ideas and concepts from elsewhere, made up a few of our own" (Miller and

[20] They define 'rationalities' as 'styles of thinking, ways of rendering reality thinkable in such a way that it was amenable to calculation and programming'; and they define technologies as two types: first 'assemblages of persons, techniques, institutions, instruments for the conducting of conduct', and second 'human technologies….all those devices, tools, techniques, personnel, materials and apparatuses that enabled authorities to imagine and act upon the conduct of persons individually and collectively, and in locales that were often very distant' (2008, p.16).

Rose, 2008, p.9). This is a widely used approach and O'Farrell, in her book *Michel Foucault* (2005), has argued that it is the most appropriate way of using Foucault's ideas (see Ch.5 'A Tool Box for Cultural Analysis').

But against this, Paltrinieri (2012) has now argued that we should be wary of transposing Foucault's tools into other theoretical frames, and so should pay just as much attention to the box. Hoskin (2015, p.75) translates as follows: "the fact of appropriating the *tools* in the box should not lead to under-valuing the *box*, and even more the work of continual reconstruction and transformation of that box" (Paltrinieri, 2012, p.10).

The approach taken here seeks to keep the Foucauldian 'box' in view, and so to focus on how subjects both become 'governable' as objects, and also become those who engage in the complementary activity of 'governing' *as* subjects. Here some of the other approaches to using Foucault are arguably more in tune with such an approach.

There is for instance the work of Hoskin and Macve (e.g. 1986; 1988) which has worked more in a historical-theoretical than a sociological tradition, undertaking a form of 'history of the present' which pays particular attention to how apparently secondary or second-tier forms and practices such as those of writing and teaching or learning may constitute ways of thinking and acting. It has therefore approached accounting as a form of knowing and a practice which is involved in constituting historically distinct forms of valuing and 'acting on the actions of others'. I shall return to this work below, not least given Hoskin's recent work (Hoskin, 2015)

which suggests ways in which their earlier approach to using Foucault needs reformulating to focus more explicitly on the importance of the 'statement' within Foucault's work, so that analysis may more systematically engage in combining archaeological *and* genealogical forms of approach.

One other important strand of research, and one which has developed more recently is that pursued by Dean Neu and a range of co-authors, which arguably traces a path somewhere between both the Miller and Rose and Hoskin and Macve approaches by taking into more explicit account the overlaps between the work of Foucault and Deleuze (e.g. Neu et al., 2009; Neu et al., 2015; Neu et al., 2013).

Here Deleuze's concern that the core of Foucault's analysis begins always with the statement is taken up, along with Deleuze's own analysis of modern society as a 'control society'. This has led to a form of analysis which focuses upon what at any given time is visible (and so what is thereby hidden) and how such forms of visibility (internalised within subjects as well as playing across them) construct particular forms of panoptic control, made up of 'luminous arrangements' (Neu et al., 2015, p.49). But these are understood not as simply exercising control 'over' supposedly passive subjects (or subjects as 'objects') but also as enabling subjects actively to construct themselves as ethical subjects (Neu et al., 2015, p.53-54). So for instance, that paper argues that, even though corruption is widespread and widely perceived as endemic in many modern business and political settings, the space exists for subjects to engage with such 'luminous arrangements' as anti-corruption practices, practices which may therefore be understood as 'both disciplinary and productive' (ibid., p.49)

and so construct themselves as 'ethical subjects' who autonomously albeit within a given era act positively against corruption. Thus they argue that this may now prove to be a way forward within a world seemingly committed to continuing waves of fraud and corruption.

This approach is particularly helpful on suggesting the importance of considering the subject not purely as object.[21] A similar recent article which follows a similar approach is that of Skinner (2013), which is helpful for the way that she draws on Foucault's focus on the interplay of subjectivation and objectivation to construct 'an ethnographic account of self-formation' based on field work undertaken in 'the contemporary setting of a self-managing organic farming community'.

To do so, she investigates how 'technologies of the self' are implicated in constructing the governing of the community while refusing hierarchical or 'leadership focussed' practices, but at the same time how this entails the activity of subjects in 'governing' not least at the level of 'self-governing' as both an internal and external (i.e. mutual and reciprocal) process. Thus her study seeks to avoid "compromising the self-forming, self-regulating activity of the ethical subject presented by Foucault in his studies of (Greek and Roman) Antiquity" (Skinner, 2013, p.904).

[21] However, note the response of Hoskin (2015), who argues that while this is one form of ethical subject who may be currently 'constructable' within the world frequently designated as neoliberal, so also, using Foucault's own analysis of the construction of an 'ethical substance', may the subject as 'entrepreneur of one's self' of the neoliberal universe, as 'the disciplinary and ethical subject's twin' (Hoskin, 2015, p.80)

In a similar way, this study recognises the significance of the governmental practices which operate to construct forms of 'administrative coordination', which in the case of the organisations where RPs work are hierarchical and leader-focussed, and also recognises how accounting operates to construct RPs, like all other employees, as 'governable subjects'. At the same time, it seeks not to compromise Foucault's focus on the self-forming and self-regulating thinking and acting of subjects, and therefore seeks to investigate how RPs are specifically engaged in a positive way in making statements that contribute to that self-forming and self-regulating.

It therefore recognises how RPs will be 'rendering reality thinkable' in ways "amenable to calculation and programming" as Miller & Rose say (2008, p.16, see above note 20). But it also seeks to show how, even in doing this, they are enabled to contribute to positive outcomes in environmental terms, through their deployment of accounting knowledge and statements. In part this is because RPs as subjects have a certain claim to being 'authorities' within their spheres of expertise: one issue is therefore to consider how they may, as knowledgeable authorities, 'act on the actions of others' to promote green outcomes via accounting.

Thus this study seeks to operate with a 'bottom-up' approach which does not begin from 'the subject as such' but seeks to understand how we as subjects act within 'governmental' apparatuses and technologies but still are able to make positive statements within particular 'truth games'. Insofar as it succeeds, it may hopefully avoid operating as a 'cargo cult' approach to, or form of, environmental accounting. But it is time to go in more detail into the reading of Foucault that it draws upon. The

reading of Foucault as having been engaged in a ‘bottom-up’ analysis which is also a ‘critical history of thought’ derives from a series of reflections that he wrote concerning his research trajectory, written in the last months before his death in 1984. In particular the piece entitled ‘Foucault’ and published under the name Maurice Florence (1994) describes his work as a ‘critical history of thought’ in which thought is understood as the ‘act’ which constitutes as subject and an object in their relations to each other.

He then observes how methodologically he has always followed three procedures: first, not to assume that we have access to understanding at an ‘anthropological’ level where we encounter ‘human nature’ as such (since we can only ever do so within a particular historical frame): second, not to work with a construct of the ‘constitutive’ or ‘constituent’ subject (as in the Cartesian idea of a coherent ‘I’ who can have a direct knowledge of who ‘I am’ as the I in ‘I think’, or in psychologies of the subject). This then leads to the positive claim that his third methodological procedure has been to begin always from the level of studying what was done at the level of ‘practice’, with a particular focus on those practices which are “more or less regulated, more or less conscious, more or less goal directed” (Florence, 1994, p.318).

These practices do not take place, initially, at the level of ‘the social’, although they are disseminated socially: instead they begin at the level of thinking, as they all entail thinking in one or another respect. Therefore, insofar as one follows Laclau and Mouffe in the view that antagonism is “the basic precondition of political

action" (Spence et al., 2010, p.78), this approach suggests that the form that such antagonism will take will have to take into account what kinds of 'more or less conscious rules' are the practices forming conduct, what kinds of 'more or less conscious knowledge-thinking' are the practices forming reflective knowledge (at the level of *savoir* and/or *connaissance*), and what kinds of 'more or less conscious goals' are implicated in one's relations to one's self.

But at the level of 'experience' as defined by Foucault, there will be difference. For there will be differences across individuals in specific forms of conduct, in specific things said and written in truth games, and in specific ways of constituting the 'ethical' self. Therefore in this context, starting from the level of thinking there will be divergent ways of being environmentally-conscious, even as there will be regularities in what gets said and what remains as silence: there will be various ways of acting and re-acting on the actions of others. Thus 'antagonism' and conflict can be expected to constitute the ground within which 'truth claims' will be made and challenged in this approach to studying environmental accounting and disclosure practices.

In many respects, this kind of approach has been adopted in a range of 'practice-based' ways of researching accounting and management. For any study of accounting as or in practice will not conceive of it (accounting) as something that can be taken-for-granted either in terms of 'what it is' or 'what it does': as Ahrens and Chapman put it: "Accounting cannot be understood simply with reference to its supposed functional properties because it is implicated in the shaping of its own

context" (Ahrens and Chapman, 2007, p.2). This study certainly picks up from such work the recognition that analysis of accounting as practice offers a range of new opportunities to explore accounting in action and to contribute to the current state of knowledge regarding 'what accounting is' and 'what accounting does'. This study simply seeks to do so by drawing in particular on Foucault's theorising of practices as entailing the close study of 'what gets said' (and does not get said); thereby it seeks to focus on the operation of accounting practices in situations where and when such practices enable environmental interventions which reframe, and possibly bring a new kind or level of control over, environmental discourses and problems.

With this approach, it seeks therefore to open up a way in which it may be possible to investigate how far individual RPs (practitioners) may perform differently in their ethical commitment to environmental accounting and disclosure practices and the extent to which they may contribute to them even while they are performing in accordance with environmental accounting standards and the rules of certifying bodies. Some of the questions that therefore arise are: How far are people in accounting departments focused on environmental issues? How far are people in the accounting area using accounting in narrow ways (in terms of environmental issues) to generate information? Alternatively, how far has environmental accounting helped create a new role for accountants and RPs in producing environmental information? How far has environmental accounting changed accountants' ways of thinking and acting? How far are accountants constructed in action to bring environmental accounting standards into action? How far has environmental accounting empowered accountants/RPs in generating environmental information?

Recognising that it is not possible to cover all of these issues, even if they are all of concern in developing this research project, the project therefore seeks in particular to highlight the significance of the 'how-question' and lead to the following research questions: 'How far is environmental accounting adopted and how is its implementation made to happen?' To drill down more to the level of practices, I then propose to ask: 'How and how far are accountants and other RPs implementing environmental accounting in practice and generating environmental information?'

The issue of how to put a Foucauldian approach to work in studying practices and their relation to discursive regularities is now undertaken, in the next section.

2.4.1. On studying practices along Foucauldian lines

The work discussed above in accounting and management that has drawn upon Foucault has variously analysed interplays between forms of knowledge and the exercise of power. It has also often contributed to understanding how humans, in different eras, have engaged in coordinating action in space and across time, particularly when one takes into consideration, as noted by Frandsen (2009), accounting's status as visible sign system always producing "naming and counting" statements, even before the invention of writing (see also Ezzamel and Hoskin, 2002).

Moreover, the work of Hoskin and Macve (1986; 1988), referred to above, has also suggested how it may be possible to extend Foucault's theorising through considering accounting as an especially significant way of knowing, valuing and exercising power, particularly once accounting and management begin to interplay in

the modern forms of private-sector and now public-sector entities, enabling, as they do, the emergence noted by Chandler of oligopolistic markets and political economies, ensuring both "unfair competition and the misallocation of resources" (Chandler, 1977, p.8).

The approach here now argues, following Hoskin (2015, p.74, esp. note 6), that the more 'genealogical' focus on practices has to be pursued by taking on board Foucault's insistence (see above, footnote 8) that there must be a complementary 'archaeological' focus on the 'statements' that make up historically particular 'discourses'. If that path is followed, then the focus on accounting as significant way of knowing, valuing and exercising power must incorporate a more explicit focus on the *accounting* statement, as what always 'names and counts', and how such statements operate in contemporary 'truth games' concerning the environment as such, and its relations to economic and political considerations: simultaneously there must be a focus on key subjects making and interpreting such statements and the 'subject positions' they take up in seeking to contribute to these 'truth games'.

Thus arguably such work can only bear fruit insofar as it keeps in view one other central aspect of Foucault's project: to study and understand the relations between "subjectivity and truth" (Foucault, 2000a, p.281), whilst also paying attention to the problem of the truth-teller insofar as this requires focusing on "truth-telling as a specific activity, or as a role" (Foucault, 1983, p.74). 'Truth' here refers not to the truthfulness of particular statements or findings, but the forms of truth-telling (or

'veridiction') required to participate in one or another form of 'truth game'. Accordingly:

> "Truth is to be understood as systems of ordered procedures for the production, regulation, distribution, circulation and operation of statements" (Foucault, 1980, p.133).

Keeping in view this concern with 'truth games' is central to the kind of work I seek to undertake here, into what is taking place in the interplay between accounting and environmentalist concerns. With that in view, I now return to the reading begun above, of the piece on 'Foucault' by 'Maurice Florence' (2000). As argued above, this is a highly important reflection on his work on practices. At the same time, I follow Hoskin's suggestion (2015, p.73) that it should be read alongside two other pieces from the same period, late 1983 and early 1984: the Preface to *The History of Sexuality* (which was published as a separate piece, not within Volume 2 of the History, and which is in the Foucault *Ethics* volume) (Foucault, 2000c) and the actual 'Introduction' to *The History of Sexuality Volume 2* (Foucault, 1990).

Hoskin (2015) says of these three pieces: 'Together they relay an insistent and consistent message concerning 'the subject' and how to approach its analysis: first…that, as a methodological choice, it should not be treated as 'constitutive' (Florence, 1994, p.317); and second, that it should be approached from the side of 'thought', and of 'thought' understood as historically given and situated' (Hoskin, 2015, p.73). The following observations therefore draw from all 3 sources to amplify what is said in the Maurice Florence piece concerning the relations of the subject to truth (games), and so suggest how this whole set of relations – between thought,

speaking, acting, writing, modes of knowing and acting on the actions of others, and engaging in truth games – may be pursued in this study.

2.4.2. Theoretical underpinnings and methodological considerations

To repeat: in undertaking a 'bottom up' analysis, I intend to be following Foucault's lead. For the purpose of this dissertation one significant place where he proposes how this may play out in terms of interplays of modes of knowing and exercising power is on the final page of the *Security, Territory, Population* lectures, where he suggests seeing the state "as a way of acting (and) as a way of thinking" (Foucault, 2009a).[22] I propose to apply this form of bottom-up analysis since then the actions of the organisational entities I analyse may be analysed in the same way as the actions of the individual subjects who are my major focus. There are the same regularities (and silences) to the ways of thinking and acting, given that, as the Maurice Florence piece sets out, the relation of thought to acting (in the world) and to acting within given systems of thought or *savoir* always works through historically situated subjects (who therefore always live and live through a historically specific 'experience').

Accounting practices today are widespread and continually applied as a way of measuring and recording transactions of business, in order to reveal the supposedly 'true' performance of entities. However, the matter of performance entails building on "pre-existing forms of continuity" (Foucault, 1972, p.25) while incorporating new

[22] I draw again here on Hoskin (2015, p.74, note 4) who points out that this is a corrected translation of the published English version which refers only to seeing the State 'as way of acting'; however the French version (Foucault, 2004) states: "L'État comme manière de faire, l'État comme manière de penser…c'est une des possibilités (sc. d'analyse) qui est, je croise, suffisament féconde".

statements where necessary; and so performance becomes redefined as incorporating the domain of organisations' environmental performance as well. So even if the practice of accounting as a means of visualising organisations' 'true' environmental performance seems to be more or less un-challenged, and even if accounting appears to have only a one-way influence on actions concerned with the reduction of environmental problems, in following Foucault, particular kinds of challenge may arguably be mounted leading to the formulation of specific 'antagonistic' questions (in Laclau's sense).

Such questions may include: 'Why are accounting and accounting practices vastly employed as means of reducing environmental problems and bringing control over the issue of man-contributed climate change in order to prevent its threats on human-being and quality of his life?'; 'What is the range of practices emerging and being used, and what are the range of things being said?' In order to operationalise these as research questions for this study, it seems helpful to re-phrase them wherever possible into 'how' questions: but as 'how' questions that are understood as being asked within the era of modern accounting 'truth games'.

How they will be asked will depend in part on our 'experience', understood in Foucault's terms (as set out in the stand-alone Preface to the *History of Sexuality* project discussed above) as entailing a correlative engagement with (i) 'a domain of knowledge', (ii) 'a collection or ensemble of rules' and (iii) a 'mode of relation of the individual to self' (Foucault, 2000c, p.200). Thus it is understood that our experience always has a historical relation to the forms of knowledge we grow up

learning and internalising, to the rules or norms for acting that we internalise, and only then a relation (including one of 'self-presence') to the self, and then by extension also to others.

But equally it is important to keep in mind how to characterise the era in which we live in terms of its 'truth games'. Here one Foucault-derived characterisation is that developed in the work of Hoskin (e.g. 1993) and Hoskin and Macve (1986), which analyses our truth games as those of 'disciplinarity', thus picking up on how in modernity the 'disciplinary' form of power is linked to the spread of disciplinary forms of knowledge, and with accounting itself becoming a knowledge discipline (Hoskin and Macve, 1993). But further both forms of 'disciplinarity' are developed only once humans begin to develop their own forms of knowing and conduct through learning under the pedagogic practices of writing, examining and grading which do not emerge as a set of such practices until the late 1700s.[23]

As these practices spread across higher and school level learning, gradually more and more modern knowledge experts have come to learn under the 'discipline' of being made to write, being constantly examined, and being numerically graded on their performance, thus enabling the development of what Foucault in *Discipline and Punish* called "the individuality….of the calculable man" (Foucault, 1977, p.193). But increasingly such experts also become 'calculating' as well as calculable, and expert knowledges that both name and count (such as statistics, economics and the

[23] Hoskin (1993) traces how these practices, in different combinations, are developed simultaneously but apparently independently in elite higher education settings from the 1760s: in the new pedagogic spaces of (i) the Seminar in Germany, (ii) the laboratory as place for practical work in France, (iii) the Senate House at Cambridge as place for doing written exams and (iv) the Classroom at Glasgow as place for answering extempore questions on prescribed readings.

modern professionalised forms of accounting) begin to operate as a key means of 'acting on the actions of others', managing individuals, groups and 'populations'.

Among the disciplinary experts occupying such roles today there are now environmental experts alongside engineering, sciences, economics, politics and so forth; and they follow such other groups in appropriating, among other knowledge disciplines, accounting's forms of naming and counting to engage in the 'truth game' of addressing environmental issues and seeking their solution, whether through scientific or technological fixes or through deploying accounting-based approaches such as cost-benefit analysis to frame a 'solution space' more widely.

Thus they operate in a world that is connected and linkable through disciplinary knowledge forms and their deployment by expert-populated entities (from government units, to corporations to environmental pressure groups and beyond). There is therefore an overall 'disciplinary knowledge' frame within which experts from a range of *specific* disciplines engage in 'antagonistic' debates and battles, in which they seek to generate a level of 'truth dominance' whether in the form of specific 'solutions' or general strategies for given environmental issues, or in terms of gaining dominance in the relevant arenas of decision-making and implementation, whether within a given organisation or at multi-organisational levels.

The research sites investigated in this dissertation are therefore understood as being located within these wider networks where disciplinary experts engage in a whole range of antagonistic truth games. At the same time, the focus will be on the local actions and struggles of one key set of expert actors, the Report Preparers (RPs),

observed in situ, as a way of understanding how such truth games are conducted at a micro-level, but with effects that may be felt much more widely. Chapter 3 will go further into the diverse forms of expertise that RPs bring with them, while also considering ways in which accounting becomes integral to their analyses and proposals for successful environmental interventions.

2.5. Chapter summary

This review of the environmental accounting literature has suggested that there are some long-term and unresolved conflicts in the dominant research approaches developed from the 1980s, but also that there are potential ways of moving beyond these.

From one research angle, accounting has come under criticism for not developing its 'revolutionary' potential for addressing and controlling man-made environmental impacts. From another, accounting has apparently developed a range of effective technical interventions, evidenced in the adoption of CSR agendas which demonstrate positive environmental outcomes. Such successes are then published in regular CSR reports, claiming that not only are organisations applying accounting practices effectively to improve their environmental performance but also these have enabled a given organisation to improve their performance financially and as 'good citizens'.

However critical voices have been increasingly raised against the adequacy of both these research approaches. The revolutionary potential of Social Accounting has been questioned as being too narrowly framed and ignoring the integral roles of

‘antagonism’ and difference in any debates on such a critical and contested area as the environment. The importance of taking into account such factors has been argued to be essential if adequate forms and concepts of accountability are to be developed. Meanwhile research showing corporate success has been critiqued for allowing a ‘corporate veil’ to be drawn over what may often be questionable or contestable success claims, and for implicitly defining the potential roles of accounting as being essentially secondary and/or a technical ‘answer machine’.

In order to draw on such critiques, and to pursue the kind of expanded agenda they map out for environmental accounting research, the review has then investigated the possibility of drawing on Foucault’s theoretical approach to develop an appropriately critical research approach, which can consider how both accounting practices and accounting statements or discourse operate and interplay in the construction of varied and alternative solutions to environmental issues. In proposing a focus on the work of RPs, there is scope for considering the process of reporting as a whole rather than reports in isolation, and thus, hopefully, for investigating ‘what accounting is’ and ‘what accounting does’ in environmental spheres. From this I seek to ask: ‘How far is environmental accounting adopted and how is its implementation made to happen?’

Michel Foucault’s analysis of ‘practices’ and ‘statements’ will form the basis for tracing how knowledge-based techniques are involved in shaping our ways of thinking and acting. Here a key focus will be on how subjects in business and government settings make use of forms of accounting. The interplay between

accounting as practice and discourse and the thinking and acting of subjects involved in today's attempts to promote environmental benefits can therefore be seen as a truth-based form of 'making sense', and in making visible "the processes proper to an **experience** in which subject and object 'form and transform themselves' in relation to and in terms of one another" (Florence, 2000, p.462, emphasis added).

Chapter 3: Research Method

3. Introduction

In the first section of this chapter I first discuss some key points in Foucauldian methodology which frame my choice of methods for operationalising this investigation. This is then followed by sections discussing the value to the research design of drawing on ethnographic approaches, the issue of the appropriate number of field cases to include, and my approach to organising the project narrative, once I had decided to work with one organisational site for my field work. In the next section I give an account of my research process in terms of (i) access, (ii) the type and range of materials that I have collected, with details about (iii) how I analysed what was being collected. The chapter concludes by a reflective discussion of the ethical issues that I have had to bear in mind in this investigation as well as clarifying what challenges I have been faced during the course of investigation.

3.1. Towards a Foucauldian methodology

In putting to work a Foucauldian problematisation of accounting (as discussed in previous chapter), it is necessary to identify relevant and appropriate methods for use in this study, with its focus on the question: 'How and how far is environmental accounting adopted and its implementation made to happen?' I seek here to follow Foucault's three methodological principles as set out in Florence (2000, pp.461-462): (a) the need for 'a systematic scepticism concerning anthropological universals', (b) an avoidance of treating the subject as 'constitutive' (i.e. as a sovereign subject outside history and a historically formed relation to others and to forms of thinking and acting), and instead (c) to begin from a focus on "what 'was

done'" (Florence, 2000, p.462) through tracing the "more or less regular/regulated,…reflective/reflexive…and goal-directed/finalised" (Florence, 2000, p.463) practices through which constitute themselves as subjects and having relations to objects. I will adopt these three Foucault's methodological principles for analysis of the field that concerns the historically emergent interplay between accounting and 'nature' (in a discursive world where nature becomes constructed and named as 'the environment'). What I shall seek to problematise is *how* and *how far* accounting produces solutions to man-made environmental problems.

It is in this way that this study seeks to question the world and accounting, and to focus on how forms of accounting are applied, implemented and internalised throughout the process of environmental reporting by particular subjects that I denote them here the 'RPs', who seek to contribute to sustainable development by applying accounting-based forms of solution to man-made environmental problems.

To start with, I take the environmental accounting statements as my 'object' in this study. As extensively discussed in Chapter 2, the practices of environmental accounting and reporting/disclosure through the process of reporting, in which various environmental reports are composed and produced, is not analysed to a great extent in previous studies, although there is extensive analysis of those 'environmental reports' which are composed of *environmental* statements, I rather turn the focus more systematically onto those practices which constitute the process of 'reporting' (Foucault, 1980, p.133) as conducted via accounting. So there are similarities to forms of analysis which have studied the process that begins when

environmental statements get generated and then distributed and communicated to relevant publics and then perhaps put into circulation across a whole society or population in various forms of environmental report, as in the case of CSR. However, by considering accounting-based environmental statements as object of this study I shall seek to follow and analyse where these statements go, how they are used (in environmental reports and elsewhere), and how far relevant publics and/or recipients/readers of those reports act upon them.

By addressing environmental statements as 'object', I seek to follow a process of reporting which is not limited to studying the rule-bound procedures typically found within reports by or to governmental and authority bodies – i.e. those rule-bound procedures that in Foucault's words form a "'code' which rules ways of doing things" (Burchell et al., 1991, p.79). I seek instead to shed light on a more informal reporting process as undertaken by RPs, as sense-making subjects, following how they take part in developing and modifying reports which systematically integrate accounting statements into their narratives. It is hoped in this way to possibly construct a different but rich picture which will illustrate the roles and functioning of accounting in serving environmental spheres.

In this way it is hoped that the practice of environmental accounting and reporting, understood as a "regime of practices" (ibid., p.75), may be studied with a focus less on the accuracy and truthfulness of environmental reports and more on investigating "how men [i.e. RPs] govern (themselves and others [environmentally]) by the production of [accounting-based] truth" (ibid., p.79) through implementing

environmental accounting and reporting practices in order to solve man-made environmental problems and contribute to sustainable development.

To undertake this kind of Foucauldian analysis, looking at what gets said as well as the practices of coordinating what gets said and done, I needed to enter a *field* where such environmental accounting statements and practices are talked about and performed – a place or places where I can trace such statements and practices, as they circulate within and beyond organisations. In this regard, to follow accounting-based statements and study such accounting practices through 'field' work it is necessary to understand the construct of 'field' as something that is not only part of the empirical world, but is also constantly being shaped by the theoretical interests and emergent understandings of the researcher (Ahrens and Chapman, 2006).

Therefore, the method of fieldwork has assisted me to study the present by following and observing the contemporary practices being implemented by practitioners. At the same time, in order to diagnose the present, it has been essential to take into account 'history' in the sense of what has gone before, both in relation to the organisations and individuals encountered in this study, and the wider established ways of thinking and acting, concerning such issues as accounting, management and the environment (Kendall and Wickham, 1999). Therefore, the study has combined fieldwork generated material with relevant primary and secondary materials and records (usually understood as conventional 'archival' work) to ensure that the approach is systematically capable of generating insights.

Therefore, so far as is possible, I have sought to combine these approaches to generate understandings of how accounting is put to use to solve environmental issues which therefore come to constitute the 'field' of my study.

3.2. Research design

Following above discussion the design of the approach used here draws, to an extent, on ethnographic ideas but with a systematic commitment to framing the research as historically informed since it is an essential aspect of studying lived experience in 'the now'. This will be applied when following environmental accounting statements guided by the five analytical elements to study the whole process of 'reporting' (production, regulation, distribution, circulation and operation) (Foucault, 1980, p.133) when seeking to understand (a) the production and significance of environmental accounting statements and (b) the systems which generate such statements. It is here that I have drawn on 'ethnography', particularly where possible the idea of a mobile ethnography (Czarniawska, 2004; 2007), as a model to follow in engaging with RPs and other organisational members in their everyday practices and activities (Tomkins and Groves, 1983).

Picking up on the idea of ethnography as "the art and science of describing a group or culture" (Fetterman, 1989, p.11) has enabled me to describe how group of RPs go about implementing accounting practices and to consider how they interact with organisational members beyond the team, since such members, in undertaking their work, typically cannot avoid generating environmental problems and forms of harm.

In this respect I have followed in a tradition of such studies in accounting research which have engaged in 'close-up' analysis of accounting in practice (e.g. Jönsson and Macintosh, 1997; Frandsen, 2009; Morales and Lambert, 2013). In such work fieldwork has necessarily involved observing "human beings in social interactions" (Wolcott, 1995, p.11), where frequently sensitive interactions or negotiations are in play. This was very much the case here where I sought not only to follow RPs in their interactions with other organisational members but also to gain access to their reflections on 'doing environmental accounting' whether through discussion and conversation or through access to written reflections as well. This I found was a valuable way of learning about current practices while gaining some more in-depth engagement with the subjects in action in their 'local centre' and how they connected to others beyond the local centre as well.

Fieldwork is also defined as "living another world […or…] learning another world by way of experience" (Hastrup, 1997, p.365). It should be noted that I (as an outsider) could not experience directly the implementation of accounting within the organisational context. The fieldwork was to gain knowledge about role of accounting in fighting climate change at the micro-world level of University X studied through a process of 'observing' rather than 'living another' world.

Czarniawska (2007, pp.17-18) also talks about 'shadowing' as a method that an outsider can follow when given access in order to learn about what is going on. This involves following 'selected people', 'objects', and engaging in 'diary studies' (from simple logs to entire archives), through what can then be called "the contact zone"

(Hastrup, 1997). This again was a set of techniques which I benefited from drawing upon, although I was not in a position to engage in systematic shadowing as an integral or major aspect of my fieldwork activity.

The form of observation which I therefore undertook, drawing up to a point on ethnographic techniques including shadowing, will be described in more detail in section 3.4.1 of this chapter. However I would just add here that I sought, in line with ethnographic methodology, to keep my mind open towards contingencies while I was observing subjects (RPs) in the field. In this way, I sought to respect the ways in which subjects engaged in work processes and interactions with technologies, and to recognise the diversity of organisational members' values, beliefs, and social relations, and of the forms of management strategy and control encountered as integral aspects of organising and the organisation (Ahrens and Mollona, 2007).

More being an outsider needed to reflect on, and to prepare making sense of, what was going on. Not least the outsider I would be regarded as by insiders and how much 'interruption' I as a researcher would make of their work. In addition, there was always the risk of treating RPs as an 'object' insofar as I, as the researcher, had my own way of thinking and talking about green issues as well as acting and living green, which was not necessarily the same as the ways of the thinking/acting subjects I was observing and studying. It was therefore necessary to 'bracket' my personal views in seeking to evaluate the 'green style' of RPs (whether at an individual or a collective level). One way in which I sought to do this was by recognising how my subject position was necessarily distinct from theirs, given that I was approaching

their field of action from a ‘learning subject’ position, while each of them was, in a differing way, in an ‘expert subject’ position, with the set of RPs potentially constituting a distinctive ‘expert group’; with its own ‘culture and practices’. Part of my reflection was about to what extent this ‘culture’ and these practices under study were ‘exotic’ to me. Even where I was studying people who were working in an organisation of a type that was familiar to me, I was approaching their ‘experience’ as a form of stranger, since I was encountering a complex set of activities, ideas and expertise of with which I was not previously familiar. In this instance I *was* familiar with accounting practices in various forms and settings (including in Iran and the UK). I was also aware that this familiarity could help me to do systematic ‘observing’ of what was going on in my fieldwork settings without having to interrupt too much. Sometimes this led to situations where, even though I was an outsider trying to interpret the green ‘culture and practices’ of a group of insiders in a particular organisation, I experienced moments when I felt that the RPs were treating me not as an outsider (and so in a sense as ‘object’), but rather as one who was sufficiently expert in certain respects to have some status as an ‘insider’ (and so more as ‘subject’).

For instance I tried to cause as little disturbance to the work that staff were undertaking as possible, and so in a way to act as ‘object’ if you wish. Sometimes I felt that I did not succeed, particularly early on, so that there was a process where, as a researcher and stranger initially, I gradually became more familiar with organisational patterns of activity, as well as with the people working in the organisation. Over time I felt that I became more aware of what might constitute

disturbance or disruption, and how to avoid it; at the same time, staff became more familiar with me, and comfortable with my presence; so for instance at meetings staff often handed me a copy of the agenda. This I took as a sign that while I was still an outsider I was sufficiently 'inside' to be treated as a subject.

To complement the fieldwork material obtained from observation, I used semi-structured interviews wherever possible, as a means whereby more in-depth interaction could take place between me and individual subjects. The choice of semi-structured interviews was made so that subjects could make observations along lines of discussion which they themselves developed, while I could in the course of such discussion introduce specific issues that I wished to cover at moments when it was appropriate or relevant to what was being said, for instance when I felt that I needed to clarify things that I had noticed during my observational activities. In such interviews, I also sought on occasions to draw on my 'stranger' subject position to ensure that I did not assume too easily that I understood or took for granted workplace routines that had become familiar to me. This was important since sometimes statements or practices may be treated as so 'obvious' that their function or significance may tend to go un-noticed. In order to handle such issues I found it helpful to keep making notes which at the time might seem to be trivial but which when re-read enabled me to become aware of things that I had overlooked before. Thus I sought to keep the mind open for surprises. More details will be discussed in section 3.4.

On the other hand, as just mentioned, I sought to integrate a historical dimension of understanding into this ethnographic 'style' of researching, as an integral feature of seeking to understand the 'experience' of implementing accounting-based practices for environmental purposes and writing CSR-oriented reports. In this respect I attempted "a historical investigation into the events" (Foucault, 2000b, p.315) which led individuals to constitute and recognise themselves as RPs (or environmental truth-tellers). In this respect, the form of investigation attempted to be "genealogical in its design and archaeological in its method" (ibid.), in the sense of seeking to understand how the 'past' of these experts, in the form of the disciplinary expertise they had acquired and the patterns of professional conduct they had internalised, contributed 'genealogically' to the forms of accounting-infused statements which constituted the 'archive' of things said and written which I sought to study.

In presenting the analysis from these genealogical and archaeological perspectives I have organised my narrative into two separate chapters. Chapter 4 considers the wider frame within which forms of expertise possessed and articulated by diverse sets of interested parties have developed certain regularities of things said and written concerning 'the environment' which have drawn systematically upon accounting statements. Here the focus is on international and national level interventions, such as the Kyoto agreement and national level commitments to carbon targets or green legislation. Chapter 5 then considers how such wider discursive regularities have impacts at an organisational level, with a particular focus on my major case study, but drawing upon insights from the other fieldwork that I undertook.

In this respect, chapters 4 and 5 should be seen as interactive parts of one analysis. In section 3.4.3 I will explain in more detail how analysis of materials collected through fieldwork and interviews was complemented by this form of 'historical' analysis as well.

As just hinted at, one key decision regarding designing of this research project was related to whether to include one or two 'field cases'. In having one major field case the advantage was that I could spend more time and get to know what was done and said in detail which well corresponded to the bottom up approach adopted here. On the other hand having two but different cases where environmental accounting was present meant that advantages could be made in comparing and perhaps gaining further insights. Having one big case meant that it had to be a significant case so as to be able to carry the empirical significance for the research question on its own. It had to be a field as noted (Chapter 3) of environmental statements and practices, but also where combined synchronic and diachronic aspects could be fruitfully pursued, and where I could trace the range of different aspects of the report process within and beyond any specific organisation. A further issue was that of access. Given the 'bottom up' perspective being adopted to gain rich material and follow statements and practices required extensive and ongoing access over a considerable period of time. In the event, one of the two sites where I got access initially was able to provide me with much more limited and occasional access than the other. Therefore, it has seemed appropriate to focus the analysis here on just the one case where I had extensive access.

Several factors contributed to this decision. Access was only possible in the second case relatively late in the fieldwork process, and the extent to which a 'bottom up' approach could be undertaken was much more restricted than the first case (as is discussed in the next section in more detail). In the end, it became clear to me that, despite the valuable materials generated from the second case, it did not provide enough comparable material to enable a detailed comparative analysis of case A and case B. It was therefore decided that the focus should be put on case A, and that this should be the sole case discussed in detail in my narrative. At the same time, insights gained from the fieldwork in case B have been drawn upon where the material either demonstrates similar patterns of action or signals differences which should be borne in mind in future research. The second case concerned an aluminium recycling company, where my research activities were organised in a similar style to those undertaken in the first case. More detail is provided on the fieldwork and findings in an Appendix (No.11) to the main narrative.

3.3. Choice of field

For case A I focussed eventually on a Higher Education institution in the UK, hereafter designated as University X. I also made attempts to gain access to other possible interesting sites including a car manufacturer (which would have continued the focus in my MSc thesis) and a large aluminium recycling company both of which had a sustained history of environmental accounting practices. I made these initial fieldwork choices after having first looked into the type and range of CSR-oriented

documentation disseminated by a range of organisations from dissimilar sectors and industries, as well as within the HE sector.

This documentary search indicated that a diverse range of organisations are now producing such documentation to make claims that they are engaging in accounting for their ecological impacts on a regular basis and that they are using this approach to attempt to control pollution levels in cost-effective ways. Such claims are encouraging insofar as they indicate real commitments to environmental agendas; at the same time they signal to other companies, governments, and individuals both inside and outside the organisation that a given organisation is seriously committed to a 'green' agenda, and to disseminating information about successes that they have achieved and challenges they have identified as they extend their commitment to contributing to sustainable development.

Higher Education (HE) is a field where wider environmental and sustainable discourses on environmental solutions have circulated frequently. The way HE has been 'drawn in' and now not merely a given part but acting as a key player of set of new practices, give an opportunity to answer my question set. Learning and teaching organisations is perhaps not a surprise to see involved in shaping new ways of thinking and acting as they are, and should be, the very place where new and emerging disciplines and expertise are formed. In this regard, for instance, HEFCE, UniversitiesUK, and GuildHE officially reminded HEIs in 2009 (through a consultation process which will be explained in detail in Chapter 4) the key role that

HEIs could (and should) play in carbon-reduction movement which was consistent with the nature, essence, and soul of the university:

> "We hope that all institutions will want to be part of this effort and take opportunities to transfer learning, develop innovative and creative solutions and do what universities have always done – *change the way that we think and act*" (HEFCE et al, 2009, p.1, emphasis added).

However, historically this was not given either as part of learning and teaching topics or as how universities are managerial run but in the UK this has lately taken specific emphasis through government-sponsored Higher Education Funding Council for England (HEFCE), advisory bodies such as Carbon Trust, and HEFCE-commissioned consultation with research bodies such as SQW, and we are witnessing a significant change in how environmental issues are talk about and dealt with. Also, interestingly HE defined as the 'public sector' and opposite to the 'private sector', is a definition does not reveal the complexity of organisations that claim to be part of this field or relate themselves to the field. As this study also will show, the public sector organisations including HE are not all 100% publicly funded and some are also profit seeking.

Hence, I was looking for an organisation that already spent some on CSR time activities (where CSR-oriented documentation is understood as textual or electronic material either disseminated in the public domain or inside the organisation on a regular basis, in which the environmental performance of the organisation is systematically discussed with provision of quantitative data on and sustained analysis of such performance) which at the time the University organisation included here did.

Second, I felt that there were, when adopting a Foucauldian approach, advantages to researching in a site that was seriously committed to reducing negative environmental impacts. A Foucauldian approach, at the level of discursive analysis, is interested in discursive 'regularities', which is associated to the fact, in Foucault's view, that making new statements is in relative terms a 'rarity', until there is a shift at the level of what he calls in *The Archaeology of Knowledge* (Foucault, 2002, p.142 ff) the 'historical *a priori*'. At the same time, such 'regularities' – and the consequent rarity of new things being said, as noted in the chapter preceding the discussion of the 'historical *a priori*' ('Rarity, Exteriority, Accumulation') (Foucault, 2002, pp.133-141) – is a function of the fact that across historical ages our ways of living, thinking and acting manifest an underlying principle of 'difference'. Applying this approach to this research, HE indicated a systematic difference at the level of how the university organisations have changed in how they are talking and dealing with these issues over time – in other words, a significant break in what gets said and how things get done. At the same time, it appeared that there might well be *discursive* regularities at the level of engaging with accounting for green objectives and articulating solutions to forms of environmental damage or harm produced by the organisation. Here a principle of 'rarity' might well turn out to be in play, in terms of the relatively similar range of accounting-based solutions articulated by the RPs. In this respect, case B (see Appendix 11) may serve as a source of reference doing a similar form of research inquiry within research contexts that were dissimilar show how seemingly different engagements with accounting (e.g. in public and

service oriented versus private and manufacturing oriented settings) might reveal unexpected regularities at the levels of both discourse and practice.

Third, there was a sense in which this kind of research might be timely insofar as the number of organisations publishing annual CSR-oriented statements was increasing significantly. Therefore the organisation studied might turn out to be in the vanguard of a growing trend towards demonstrating 'green' commitment (leaving aside issues of how genuine such commitment might be in any given case, particularly as more and more entities adopted this form of discourse).

For if (or insofar as) there were regularities at the levels of both discourse and practice concerning how accounting was seen as the technology of choice for developing and implementing solutions to 'green' problems and issues, this would suggest that a shared or similar way of thinking and acting, shaped by accounting, was at work across these sites, despite all of the 'surface' differences between them.

With all that having been said, it was still fortunate that I ended up with a university research site that I was granted access to. It was only after much time and effort devoted to contacting different public and private sector entities that I ended up gaining consent from University X (and case B) to my undertaking the research project I had in view. Turning to consider the university more closely, it is the case that they annually publish CSR-oriented reports, which are available on their website. University X has published reports since the academic year 2005-06.

3.4. Research process

The research process as presented and discussed below – access, collecting of material and analysing of material here – as clear distinct parts were clearly not so in practice. Instead they were all an ongoing process and not easy to separate out. However, what is clear is that the research process had an emphasis towards more work on access at the beginning, more collecting of material when given access and more on analysing after the material collection had ended. As a way to discuss what each of these bundle of work activities were made up of I have therefore separated them out as a distinct areas of work, but will ask the reader to keep in mind the more flexible and overlapping work that took place in practice.

3.4.1. Access – an ongoing process

As seen under the section 'Choice of Field' access is a critical component to this kind of research. It takes time to find the right entrance or 'departure point', and sometimes rejection only comes after months of exchange of emails and phone calls. However, this is just the first step in a long trust-building process to secure continuous access, which is integral to any 'bottom up' ethnographic approach.

For University X I needed first to make contact with the right set of people who could authorise my initial access, plus my continued presence for a considerable time and my access to relevant contacts within the organisation. On the University's environmental webpages I found the name and email address of a person entitled the 'Environment Manager', a position which was part of their Estates Department (a

department which also included the Energy Manager, Waste and Recycling Officer, and Transport Manager).

I then sent an email to the Environment Manager introducing myself as a PhD student, and giving him a brief explanation about my research project and my interest in undertaking fieldwork within University X. In reply I received a very welcoming email from him, which included an informative paragraph about how environmental accounting had been developed in the organisation. Maybe it was being both an outsider and insider (as a PhD student and part of a UK university) that helped me to get initial access. Nevertheless I kept in mind that access is never a given and that it was important to build up trust from the outset to ensure my on-going access. An initial meeting was therefore arranged at the Estates Office, with additional one-on-one meetings with other colleagues where explained my project to all of them with details about how I hoped to collect material for my study. However my network expanded quickly as the Energy Manager also suggested that I should consider contacting not only the Waste and Recycling Officer, who was said to play a key role in developing new initiatives to reduce the levels of the organisation's environmental impacts, but also 3 other important members of the team: 2 'Utilities Technical Assistants' (UTA) and one 'Utilities Project Engineer' (UPE) who were working at their desks in the Estates Office. I was also introduced to the Waste and Recycling officer. Afterwards, the Energy Manager very kindly sent an email to all members of the team (which was copied to me as well) asking them all to cooperate with me regarding my research project and the materials I needed.

Within a short period of time, the network of contact was added with a few more, including an external agent commissioned by the university to assist them in generating environmental numbers for the university's transport issues and internal auditor and an Administration Officer for transport. In this way I got my approved and first vital point of contacts for the over 2 years I spent at the University.

In terms of access to locations and events, I was in general allowed to sit with or follow each of the university-based subjects across all the regular activities they undertook, both in the office where I would sit next to them at their desks when they were doing desk-based work, and out of office, where I accompanied them to the various locations they visited across the campus, and to scheduled quarterly meetings. I was also allowed to have a screenshot of some key IT tools (e.g. their fuel management databank), which were key features of the accounting process being developed to measure environmental costs and outputs. For the part of investigation that was linked to the external agent, I was also allowed to sit next to him at his desk while he was working with environmental accounting issues by showing and talking to me how this was done.

During my study I was always keen to make sure to build on the trust I was given from the start to keep the access going. I was keen to keep my deadlines and agreements, but also 'small' things such as be on time for meetings and other events, and equally be well prepared to respect their time not having to repeat more than necessary and being able to listen and discuss topics but without claim of being an expert but learn from them. As part of the agreement I negotiated in University X, I

agreed with my major contact, i.e. the Environment Manger, to share the results of this study with them as a way potentially to help them in improving their environmental accounting procedures.

3.4.2. Following statements in practice: Collecting documents and generating field material

Drawing on ethnographic ideas in my fieldwork I started observing the everyday function of accounting, and undertook 58 full days of observation from September 2011 until December 2013. In addition to this I also did some shorter observation periods, typically of about an hour, which in total added up to be more or less equivalent to a working day – in which case the total time spent observing was around 59 days in total. Such substantial time in following statements in practice provided me with a range of diverse range of primary and secondary data. The matter of time length spent did make a difference in terms of the depth of familiarity which I was able to develop step by step how accounting operated as practice and in practice earlier in University X, and how RPs 'grew into' the role which I have designated here as that of 'Environmental Accountant'.

In terms of planning my observations, I tried where possible to arrange visits when there were likely to be 'significant events' in terms of planning or operationalising accounting-based environmental interventions. This was particularly successful as a strategy where I was able to be present at key times of the year, e.g. meter reading or quarterly meetings. However this typically required advance planning for overnight accommodation (42 nights in total) since University X was located at a significant

distance from my home base. This enabled me to attend the range of activities comprising the Go Green Week programme and me to be 'in the field' early in the morning as well as late in the evening so to access the Estates Office at 7:30 am when the Energy Manager arrived for work (although typically other RPs came in later) or the Environment Manager arriving early in the morning in campus, after cycling to work. [That was a small detail but of relevance, since it bore out observations he made concerning his personal commitment to 'live green' as well as 'acting green in the workplace'.]

At first I had to get an overall understanding of the university, its facilities and how they worked, and not only from the outside via the webpage. It was also important to get a better sense of where and when I should focus my attention to in following environmental accounting statements and hence organised the material for a preliminary description to help me develop such understanding. This description was then complemented with further material and after some time I became more familiar how things worked, which was supported by my previous experience of knowing accounting more generally (and not so much a stranger in this sense), e.g. where and how statements were produced, and by who, and distributed among staff with different responsibilities, and how statements were circulated more widely to and from the organisation. This led me to become more systematic and therefore able to gather material across the categories I was guided by.

As I constantly read through my notes and material collected I was also better able to identify and ask for 'archival' material (in the conventional sense as defined above) -

a mix of both historical and current documents of various kinds (e.g. primary documents such as reports, forms, and documents specifying regulations and process specifications, plus secondary literature offering wider contextual information and opinions and reflections from various viewpoints) and the process became more focussed. Later in the process I was able to narrow down to specific issues towards specific events of importance such as 'Go Green Week' awareness campaign (more on this below).

More generally, in following statements from place to place, e.g. as in being produced into statements from different sources or as distribution within the organisations, it also meant I observed in a range of organisational locations such as the Estates Office itself, and other campus locations including the CHP (or power station), boiler houses, campus petrol station, plus the visits to the external agent at his work location in another city. These included witnessing how RPs were communicating each other, or being able to make a note of when, for instance, the UPE in University X was working from home. In terms of the kinds of things that I was able to observe in these sessions, these included key aspects of the whole process through which environmental data was generated and then put to use for a range of different purposes; these included obligatory reporting, carrying out environmental projects, internal meetings, performance monitoring, public transparency etc. I was permitted to have direct observation of all these activities, for example as noted sitting next to RPs when they were engaged in desk-based activities or accompanying them when they went to boiler rooms to read meters.

During observation sessions, either at office desk or out in the campus, RPs usually started first by giving me brief information about what they were going to do at that time – for example, what they did on their computer screen and why. Whilst I was careful not to cause interruption to their work, I also asked them questions which would assist me understand what they were engaged with, how those generated environmental accounting data was dealt with and why. This could include showing and describing to me such as their data bank, spreadsheets, letters and email correspondences, application forms, legislative documents and charts (in the form of online sources, files in their computers, hard copy documents, or title of a standard/legislation which I could investigate more about that later on) to describe to me that part of reporting process (or environmental accounting implementation). For example, when UTA_2 was showing me how he was designing an environmental project, he could follow his routine in faster pace because he already knew what should be done and what legal criteria had to be considered. However, he showed me the online application of Salix (where he should submit the proposed project for funding reasons), the spreadsheets used to fill out for each environmental project, and the guideline provided by Salix about legal requirement he had to meet in his proposed project, all on his computer screen (the materials which he gave me later). Therefore, by linking all these documents and tables he described to me what he did and why. If it was an observation session out of office in campus, I usually met the RP at Estates Office and then we would walk to the location he had to go to do his job and then walking back to the Estates Office or another location inside the campus. I used these walks build conversation with RPs about different topics and as

such it was also a great time to discuss their ideas about green issues related to their organisational context and beyond that.

In general, they gave me the permission to use my smart-pen switched on during my observation sessions. This enabled me to record all informal conversations between me and RPs and to note down any explanations they gave about what they were doing and why. I also took notes on the specialised notebook designed for use with the smart-pen which enabled me to have my written notes linked to the recorded voices. This device was particularly helpful when I had occasional/informal conversations with RPs as they were executing their daily responsibilities. I could listen to the recordings later and be assured that I had not missed any significant points. [The only time I was not permitted to record a session was in the meeting I attended between the UTA_1 and the Finance Manager.]

I was also permitted by them to take photos on a number of occasions, including when I was permitted to take a screenshot of some key pages while staff were working with specialised software; this was the case with the live fuel management databank in University X. They also provided me with such useful data as copies of some of their spreadsheets, emails received from an external verifier regarding completion of their environmental project, a form of table used to summarised issues to be talked about at quarterly meeting, a check list to be used for external verification/audit, and an internal link to live display screens. (I will discuss all these in more detail in Chapters 5).

Apart from my smart notebook, I used other conventional notebooks to write up contextual information providing a richer description of whatever I had seen and heard during an observation session immediately afterwards. Such information would include, for example, the location of the observation, the lay-out and decoration of the location, the time and date, the form of activity being undertaken, who was involved, plus a brief summary of how the activity proceeded and any particular outcomes or incidents that I felt were worth noting. I also included my reflections on what I had seen and heard, particularly where I saw connections to previous fieldwork events, and noted down further possible issues that I might wish to pursue in the light of the observations so far. On occasions when I had 2 different observation sessions one after the other with limited time in between, I recorded my reflective notes on the first one with my smart-pen to make sure I would not omit any important details which might be difficult to recall later on.

I used the opportunity to have lunch with those I was observing at University X. I also found times outside business hours were a valuable opportunity to get to know people better, both through having informal conversations with them about diverse issues and through getting the opportunity to observe how they were integrating a green way of living into their lifestyle such as walking to the university car-park together at the end of the day.

I also spent time by myself when I could walk around each site and guided by my new familiarity to identify how far I could find traces of environmental accounting statements. For example in many university buildings which I entered, I found an

Energy Certificate displayed in a prominent position. There were two occasions when I felt that I was able to get particularly 'immersed' in green activities within University X. These were the two 'Go Green Week' campaigns held there in 2012 and 2013. There were a diverse and stimulating range of formal activities, including on one occasion a presentation by Ms Caroline Lucas who was at the time the Leader of the Green Party of England and Wales. There were also talks, workshops, film sessions and panel discussions, e.g. about 'sustainable economic growth'; and there was even an ethical fashion show which was a fun part of events. I felt that attending these events gave me a better sense of how and how widely environmental accounting numbers were distributed across the campus space as, so to speak, 'part of the furniture' of the campus environment.

As the final aspect of my observational and interview methodology, I devoted time specifically to setting up and undertaking semi-structured interviews. This form of 'talking' has many benefits as identified in the literature (Silverman, 2004b; Silverman, 2004a). It offers a focused talking but without restraining the interviewees adding things if they wish. Also, as mentioned earlier it was a way to be less distracting while observing but also be given a chance to ask them, and them asking me, questions if something was unclear. A down side is often, as it was here, that you are left with a lot of material to interpret and organise. However, the interviews complemented the other sources of material I used to collect the material. In all I interviewed 10 people at University X in this way, where 3 were not as members of the sustainability team but in RP roles in the processes of environmental accounting and reporting implementation. The interviews included a range of RP's

with different environmental responsibilities. Details of these interviews are attached in Appendix 2. In line with standard semi-structured interview procedure (Murchison, 2010), I spend considerable time in advance of my first interviews devising questions. As the interviews progressed I amended these where I felt that I could construct better versions of the questions used. Some questions were designed to be common across interviewees, while others were more specifically tailored to people working in particular areas. I recorded all interviews with my smart-pen, and as with the observation sessions, I took notes at the end of each interview session in my second (i.e. conventional) notebook, including any reflections I had before or after the interview.

Finally, concerning the 'archival' materials which I gathered in order to gain a better understanding of the 'experience' of environmental accounting and reporting developed and implementation, I benefited from a range of documents. I collected these in two major ways. First, some materials were provided to me by RPs either in hard copy or electronic form, often via email after meetings or observations. RPs also gave me particular links to website pages which they knew to be useful sources of information. They also provided me with written documentation setting out a range of key formal rules and procedures. These included organisational or regulatory guidelines for defining or categorising their environmental problems, instructions on methodologies of carbon calculation, sets of documents regarding different standards with which they had to comply, complete with relevant details regarding definitions, procedures, assessments, penalties, etc. for each standard. These documents were either originally produced by regulatory-advisory bodies or

prepared by RPs but derived from such original documents. They also gave me their historical and current annual CSR-oriented reports (in both full and summary versions and sometimes even before official publication when it was in the draft form), plus a wide range of implementation plans, files of PowerPoint presentations, quarterly meeting agendas, and reminder or deadline charts which they had at their desks. I also used their website as a source of materials.

The rest of the documents I gathered were the result of my own investigations into key issues and my following of what one might call 'chain of connections'. For example, RPs at University X gave me a copy of their reports from previous years which were the result of implementing the Carbon Trust's '5 year pilot carbon-management programme'. From reading these I noticed that HEFCE had played a key role in generating and promoting HE sector involvement in practices of 'accounting for environmental problems'. Through following up this line of enquiry I traced the impetus for this initiative back to grant letters from the Secretary of State for the 'Department for Innovation, Universities and Skills', which in turn drew on some of the requirements and recommendations set out in the UK Climate Change Act 2008. This process, for me, was one of tracing the connected links in a chain, where one source, when read carefully, often led on to another earlier source in the 'chain of connections'.

By following this chain of documentary connections I learned a considerable amount about such issues as the emergence of 'sustainable development' discourse in the UK HE sector. Often I found these documents through trawling through online resources.

These included such websites as those of the UK National Archives, those of UK national government, and of government or government-sponsored agencies (e.g. HEFCE); they also included those of advisory bodies (e.g. the Carbon Trust), of the UN and the UN-linked divisions (e.g. UNEP, UNFCCC), of the sector policy development documents (e.g. HE sector), and of non-governmental research bodies (e.g. WRI, SQW). More detail on these and the materials uncovered is provided in Chapter 4. I also regularly checked news and media sources for environmental events and news stories, including such sources as the BBC and the Guardian as well as other bodies already mentioned such as the Carbon Trust and the Committee on Climate Change (CCC), who publish regular updates and newsletters. In this way I was able to keep myself informed and up-to-date on current developments and debates, which was crucial since there is such a high level of activity and interest in green-related issues and research.

3.4.3. Organising and analysing collected material

This part of the research was also characterised by four phases: (i) preparation of material and initial coding, (ii) initial experience of a picture emerging, (iii) critical questioning, re-reading, re-coding and re-organising of material so that a picture becomes stronger, and (iv) saturation of material and formulation of an argument. Phases (i) to (iii) were repeated as more material was added to the already on-going process of analysing, organising and making sense of the material. This was done until the materials analysed were producing a coherent sense in a sustained and

repetitive way, and so enabled the formulation of a clear (if still provisional) argument which provided a possible answer to the research question set.

It was in this context that I followed and looked at environmental accounting statements from the five perspectives proposed by Foucault, i.e. their 'production', 'regulation', 'distribution', 'circulation', and 'operation'; this was the further analytic device which enabled me to open up the environmental reporting process for further analysis. I then mainly used these five perspectives as my basis for colour coding the material (but being open to modifications or amendments to the perspectives if the material suggested this was necessary). For instance I categorised as 'production' and gave one colour to observational material illustrating how statements were 'generated' building from a range of sources such as when I followed RPs collecting readings from boilers (see previous section) before being combined into new formats as a further step in the statement generation process. When I then observed how RP's discussed or referred to such issues, I categorised this as an aspect of 'regulation', which required another colour. I then found that sometimes the same material could be categorised as contributing to different perspectives, as when a statement was 'generated' but its particular content made a contribution to a process of 'regulation', but then constituted part of what emerged as the material for 'distribution' within the organisation. Some statements might then gain a particular purchase and so contribute to the process of 'circulation' beyond the organisation. This required some differentiation of who was included in different discourses and who was not, but also how environmental accounting statements produced elsewhere might also enter and become distributed, thought about and

acted upon within the organisation, which would then constitute one part of 'production' of action, often alongside statements generated out of the internal activities of the RPs. In other words, I discovered how these 'perspectives' were relational and not simply distinct and separate analytical categories. I therefore also began to track the frequencies with which statements appeared as contributing to one or more perspectives as a further way of refining and sharpening my analysis.

In real time, I found that I had first to collect and sort the various types of material I was collecting before I could begin any sustained analysis. Where the material I was collecting related to previous international environmental conferences and other international 'gatherings' and outputs from the UN, the UK government and the media, this was a relatively straightforward process of checking sources and citations for accuracy, and filing material in appropriate categories as made provisional sense at the time. For instance the Kyoto Protocol was initially coded as 'international event'.

Regarding interviews, I transcribed all of them. Since I had guaranteed interviewees anonymity for themselves and their organisations, I transcribed all interviews by myself and typed them into Microsoft Word, making sure to remove in my transcript all clues or references in the original recordings which might have compromised these two forms of anonymity. I then sent each interviewee a copy of their interview transcript, in line with my initial agreement that they could review and edit where the interview did not represent their views properly or appropriately, and so that they could also check for anything that they saw as compromising anonymity. In the

event, none of my interviewees raised any objection about the transcripts of the interview material, either in terms of wishing to revise what they had said or raising concerns about anonymity.

I also went through all the audio files that I had recorded when I was engaged in observation of activities, since a number of occasional/informal and often intriguing conversations were picked up in them. I also transcribed these insofar as the quality of recording would allow, and then typed them in the same way as indicated above (with details on top such as date and time of observation, location, with details about people involved). Again I ensured that any confidentiality or anonymity issues were taken into account, in line with my ethical commitment.

When I began to analyse the interview material for both regularities and specific insights, I put the transcript of each interview inside a table with one empty column on the right and the transcript on the left with details of the interview session at the top (e.g. date, time, length of interview, with whom, and in which organisation). I later used the empty column on the right for coding.

Using colours in the coding process was particularly advantageous at the time of coding field notes which were still hand written. I conducted specific observation sessions before formally undertaking interviews with any particular RP (in the sense of observations which were focused on that particular RP's activities, as contrasted to the general sessions such as Go Green Week events). As those observations resulted in field notes which were hand written, I used coloured pencils to do a general and broad analysis on the collected materials and hand-written notes and

define a very early version of codes and possible sub-codes. I did that because, first, analysis is an ongoing process and starts from the first stage of fieldwork and, second, so that initial analysis could assist me in refining my interview questions (to get most out of subsequent interview sessions) as well as to think more in depth on possible directions I needed to, and could, trace further. I also did the same initial analysis with coloured pencils on the reflections which I wrote immediately after observations and interviews as well as on the field notes that I wrote at the time of the general more large-scale observations. When I had the transcripts of all interviews and particular occasional/informal conversations ready, I also typed my hand-written field notes into Microsoft Word in tables in the same way as I did with the interview transcripts, with details of fieldwork on top and 2 columns: with notes in the left one and with the right one designated for coding.

I started with first transcript and typed codes on the right column with allocated colour. I then moved on to second transcript. By reading the second transcript and comparing it with the first one and the notes I had made, new thoughts about sub-codes regularly came up (and I used new colours to reflect the new differentiations I was making).

Reading interview transcripts along with linked field notes assisted me to make connections between what I had seen and what I had heard from RPs, thus enabling me to refine my codes. The other advantage of doing this was that I could also become aware of any disconnects or silences (or even direct conflicts) between RPs'

statements and actions, as an integral aspect of tracking the range of what was said but also what was not said.

By repeating this process for all subsequent interviews and field notes in addition to the notes I made of my reflections and general observations, I modified the initial codes to the point where I had a new overarching set of codes. At the same time, I kept a record of codes and sub-codes in another Word file and updated them when I made any modification on codes.

I also developed one other category as a code which had particular of relevance in seeking to investigate the research question of 'how is the experience of environmental accounting implementation made to happen?' throughout the 5 phases mentioned in above. The category I developed I named provisionally as 'experience', on the basis that 'experience', as noted for instance by Paltrinieri (2012) and Hoskin (2015), is a construct which Foucault divides into three aspects which only together constitute 'experience' as such. As noted in Chapter 2, Foucault's concern is not to allow experience to be understood as purely 'within' the individual subject, in a psychologised form of analysis. Instead experience is for him made up of three aspects, two of which begin beyond the subject as such as aspects of the world the subject is born into, and its disseminated ways of thinking and acting: these two are the given (i) domain or 'form' of knowledge (i.e. *savoir*) of that world, (ii) its given collection/ensemble of rules and regular ways of acting , and only then (iii) the reciprocal mode of relation of the self as subject to itself as object. I therefore created 'experience' as a provisional code made up of the three sub-

codes, ‘domain of knowledge’, ‘rules and regularities of action’, and ‘relation of self as subject and object’. I still focussed mainly on an analysis of the statements made using the five initial codes; but as a final aspect of the analysis process, I sought to develop an answer to how ‘the experience’ of environmental accounting implementation is made to happen throughout the process of environmental reporting by factoring in how the dominant modern form of expert knowledge, the ‘disciplines’ and ‘disciplinary expertise’ interplayed with the rules and regularities of expert professional conduct and action in constituting particular ways of thinking and acting as a subject for RPs, and ways of reflecting on and developing their subjectivity (i.e. relating to the subject as object). I undertook this form of analysis as a potential way forward for seeking to understand the dynamics and constraints experienced in working towards sustainable development.

Finalising sets of codes was not easy because both at the time of coding materials and then when I began the writing process, I constantly had new ideas about the analyses I was undertaking. So I had to re-evaluate new codes that I might need to develop (and whether some old codes needed to be dropped). In the end, I recognised that coding was in a sense a never-ending process, which is constantly modified and changed in the process of analysing and theorising, from the early days of data collection to the final state of writing up. Arguably this is inevitable since just like the subjects of my research, I am also engaged in the act of thinking, in particular concerning the quality and validity of my analyses. However, my commitment to drawing as systematically as I could on the analytical approach developed by Foucault as I undertook the processes of coding and analysing statements gave me a

certain level of ‘comfort’ (in the auditing sense) that my analysis had become ‘saturated enough’ to provide insightful and internally consistent answers to the research question I had framed.

In order to make the text more vivid and alive, and to respect their individual subject positions, I have used interviewees’ own statements in the form of verbatim quotations whenever possible. I have also used the colour codes associated with particular types of things said to highlight the pieces I wanted to use as quotations in the dissertation. I also, wherever possible, sought to select quotations which crystallized or epitomised particularly significant or frequent statements from within the range of things said within the ‘environmental truth game’ by a number of interviewees.

Finally, in seeking to ensure that I pursued the archaeological objective of identifying regularities (and rarities) in things said beyond the immediate work contexts of the organisations involved and the current life experiences of the RPs as subjects of particular interest to my study, I looked for events and ‘things said’ which came from elsewhere. Here I particularly sought to elicit from RPs observations on and insights into their previous life experiences, with a particular focus on those aspects of or events in their previous life where they had become aware of, or sensitised to, issues linked to ‘sustainable development’ and/or ‘environmental/green’ discourse. I was also interested in any reflections they had on how such events and ‘things said’ had influenced or extended what they had previously been thinking, saying, and doing in terms of green-ness.

The genealogical aspect of this study involved considering how new ways of doing things (at the level of practice) or of acting on the actions of others had been taken up or internalised by RPs as aspects of how they now regularly thought and acted in their work activity, and how far (and when) they felt they were transitioning towards a status or 'identity' as 'environmental accountant'. [This was particularly interesting to me insofar as the RPs generally came to their new role with a strong commitment to 'green' living and solutions, and also with high levels of disciplinary 'expertise', often across a number of knowledge areas, so as to constitute them as 'trans-disciplinary' experts.] The genealogical interest was in how at the level of practices they perhaps made a transition across a border between a relatively low or even non-existent commitment to being green towards recognising the possibility of not being anymore a non-green individual, and eventually towards becoming 'green' RPs. Here a particular interest lay in seeking to establish any events that they saw as having led them to constitute and recognise themselves as RPs who are subjects, or better implementers of environmental accounting-based practices and writers of CSR-oriented reports.

3.5. Ethical issues

The access to both organisations where field work was carried out was granted based on ensuring the anonymity of the organisations as such, and of all organisational members interviewed. This included ensuring that the narrative and all documents cited were scrutinised to ensure that there were no references that would indicate the identity of the corporation or the university involved. Therefore, to fulfil these

requirements, original documents and/or pictures have been redacted where necessary, and any sensitive content (e.g. any word, logo, name etc. that would reveal the identities of organisations or individuals) are blurred or black out.

Additionally, taking into account how ethical issues are not restricted to the time that a researcher spends undertaking data collection and working with materials 'in the field', but apply across the whole period of writing a dissertation, I paid attention across the whole research process to possible ethical dangers. So for instance I rechecked as I wrote and then proof-read my text that there were no passages where issues of anonymity or confidentiality were raised. But also I had tried from early on to respect the integrity and personal confidentiality of my interviewees. For instance, there were occasions with RPs where co-workers might need to ask a question or raise some issue while I was shadowing. On one occasion UPE and I were in conversation in the lobby of the Estates Office while my recording device was on, and a colleague from another part of the department came up to have a short talk with him. Before they started talking I signalled to the UPE that I was pausing my recording device; thus even though they then had their conversation with me present, I was able to show my respect for their privacy, and signal to them that their professional conversation would remain confidential, even though they talked in front of me and I heard all of their conversation.

Ethical issues involve however more than compliance with requirements for anonymity, even if this is of course essential. As a central part of my own ethical practice I sought to engage in constant reflections concerning the individuals I

followed and how I could maintain an appropriate relationship with them. One key issue was how I should present, in writing, what they said, respecting them as active and thinking subjects. This was a constant dilemma. For like them, I am also an outcome of historical 'givens' and experiences, not least in research which requires one to engage with practices that more or less regulated, more or less reflexive and reflective and more or less goal oriented. Therefore I always sought to involve those I followed in reading over their interviews, and asking for any edits or amendments they might suggest, and checking whether I had understood things correctly. So while I anonymised everyone involved, I also tried to describe them in terms of their own experience as living, labouring and languaging individuals. Finally, when one has access to organisations such as these, it is bound to happen that you will come across certain sensitive issues or stories that are not appropriate for repeating in writing. In my case where sensitive issues were signalled in advance as possible subjects of discussion, I understood that I would not be able to record (as with the UTA_1 and the Finance Manager meeting in Chapter 3); however, I was able to take notes instead, which again then needed to be made available for scrutiny, as with interview material. In the event, there was no material collected that I was asked to withhold or edit; but I followed throughout the ethical imperative of ensuring full disclosure of the material recorded on tape or in note form to those providing me with the information. In conclusion, I was fortunate in having met and interacted with so many people who were willing to share their experiences and reflections with me, for which I am grateful, since they played such a significant part in the shaping of this PhD.

3.6. Chapter summary

This chapter has attempted to clarify how, at a methodological level, the research question of 'How and how far is environmental accounting adopted and its implementation made to happen?' has been investigated in this study. The next two chapters build on what has been discussed here and form part of the same case and analysis but divided to ease the reading and flow of the argument. Chapter 6 will bring the two chapters together into an overall argument and theorising of my findings.

Chapter 4: A Way Towards the Present!

4. Introduction

As explained in Chapter 3, this chapter and Chapter 5 seek to tell together (and interactively) the story of 'how the experience of implementing environmental accounting and disclosure practices is made to happen'. However, this chapter is more focused on the emergence and circulation of environmental discourses from different external directions, and seeks in this way to make a first identification of the range of statements made in such discourses and the discursive regularities (and perhaps silences) that have emerged either in particular discursive fields or more widely across the environmental literature. By doing this, it also studies the history of our green present whilst seeking to pave the way towards diagnosing the present. As such it seeks to constitute a form of "historical investigation into the events" (Foucault, 2000b, p.315) that happened across recent decades at international, national (i.e. the UK), and sectoral (i.e. Higher Education) levels, and which have variously contributed to the construction of a present when accounting-based practices are being increasingly implemented to manage environmental problems.

4.1. Global events in cutting-edge environmental problems

Rachel Carson's *Silent Spring* publication in 1962 (Carson, 1962) took the first steps towards raising widespread public awareness of environmental threats caused primarily by human activity. Many environmental movements were then initiated with the aim of bringing a change in the way in which the nature was (and still is) treated by humans. However, those movements were sporadic and lacked organisation until the late 1960s. Then, in a letter dated 20 May 1968, the Swedish

Ambassador to the United Nations (UN) made a proposal to the UN Secretary-General on behalf of the government of Sweden, at the forty-fourth session of the UN Economic and Social Council (ECOSOC), for the convening of an international conference on the problems of the human environment. Reference to the notion of "problems of human environment" is described in that letter as "the changes in the natural surroundings of man brought about, without adequate control, by the use of modern technological advances in industry and agriculture, and …, the impact of this process on man himself" (Astrom, 1968, p.2).

Along with the importance of building a comprehensive consideration and extending and intensifying existing international environmental efforts, the significance of this international conference refers to the matter of helping maximise the "impact on the practical actions of Governments and intergovernmental and non-governmental organisations" (Astrom, 1968, p.3). After receiving support from member States, the first United Nations Conference on the Human Environment (UNCHE) was held in Stockholm on 5-16 June 1972, so is also known as the Stockholm Conference, and this can be considered as a turning point in terms of raising political and public awareness of environmental problems in the modern era, globally. It was the first time that the international agenda was confronted by the issue of the relationship between economic development and environmental degradation. This conference resulted in the establishment of the United Nations Environment Programme (UNEP) by governments in 1972 as "the voice for the environment within the United Nations system" and to act as "a catalyst, advocate, educator and facilitator to

promote the wise use and sustainable development of the global environment" (UNEP).

Twenty years later, on 3-14 June 1992, the same event was repeated as the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro and known as the Earth Summit, with its particular message – "nothing less than a transformation for our attitudes and behaviour would bring about the necessary changes" (UN, 1992a). This conference was influenced by Brundtland's concept of Sustainable Development (SD) introduced in 1987, by which she meant "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987). Therefore, one of the agreements which was adopted by governments through this conference, refers to agenda 21 stating "a comprehensive programme of action for global action in all areas of sustainable development" (UN, 1992a).[24]

Moreover, due consideration of environmental impacts of all economic decisions was then being given by governments at both national and international levels as a way to achieve the key goals of UNCED – i.e. gaining a more comprehensive understanding of economic, social and environmental development, and establishing a global partnership between developed and developing countries towards a sustainable world because "no nation can achieve this on its own. Together we can – in a global partnership for sustainable development" (UN, 1992a).

[24] The other two agreements adopted were (1) the Rio Declaration on Environment and Development – a series of principles defining the rights and responsibilities of States, and (2) the Statement of Forest Principles – a set of principles to underlie the sustainable management of forests worldwide.

One of the results of UNCED was agreement to an international treaty called the United Nations Framework Convention on Climate Change[25] (UNFCCC) as a legally binding convention with the ultimate objective of achieving "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (UN, 1992b)[26]. This treaty came into force on 21 March 1994 as a systematic step in fighting climate change. According to this Convention, the Parties are divided into three categories of Annex I[27], Annex II[28], and Non-Annex I[29] based on their type of commitment. For example, the developed country Parties and other Parties included in Annex I are committed to "adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse

[25] According to UNFCCC, climate change is defined as "*a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods*" (UN, 1992b, p.7)

[26] According to UNFCCC, greenhouse gas is defined as "*those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation*" (UN, 1992b, p.7)

[27] Annex I Parties include the industrialised countries that were members of the Organisation for Economic Co-operation and Development (OECD) in 1992, plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States (UNFCCC). United Kingdom of Great Britain and Northern Ireland was amongst the Annex I Parties (UN, 1992b, p.32)

[28] Annex II Parties consist of the OECD members of Annex I, but not the EIT Parties. They were required to provide financial resources to enable developing countries to undertake emissions reduction activities under the Convention and to help them adapt to adverse effects of climate change. In addition, they have to 'take all practical steps' to promote the development and transfer of environmentally friendly technologies to EIT Parties and developing countries (UNFCCC). United Kingdom of Great Britain and Northern Ireland was one of Parties included in the Annex II (UN, 1992b, p.33)

[29] Non-Annex I Parties are mostly developing countries. Certain groups of developing countries are recognised by the Convention as being especially vulnerable to the adverse impacts of climate change, including countries with low-lying coastal areas and those prone to desertification and drought. Others (such as countries that rely heavily on income from fossil fuel production and commerce) feel more vulnerable to the potential economic impacts of climate change response measures. The Convention emphasises activities that promise to answer the special needs and concerns of these vulnerable countries, such as investment, insurance and technology transfer (UNFCCC)

gases and protecting and enhancing its greenhouse gas sinks and reservoirs"[30&31] (UN, 1992b, p.12). The Parties of the Convention, individually or jointly, were actually supposed to return to their 1990 levels in terms of carbon and other greenhouse gases not included in the Montreal Protocol[32] (UN, 1992b, p.12). However, what compelled the states to act was the Kyoto Protocol, which is described in the following section.

4.1.1. The Kyoto Protocol

The UNFCCC, as described in above, was an international agreement that binds its Parties to the obligation of controlling and reducing environmental threats caused by human activity. To achieve this objective, the linkage of the UNFCCC to the international treaty of Kyoto Protocol (KP) committed the Parties of the Convention to the internationally binding emission reduction targets. The KP, which had been adopted on 11 December 1997 in Kyoto, Japan, came into force on 16 February 2005. According to paragraphs 1 and 2 of articles 3 of KP, Parties of Annex I were committed to reduce their man-made CO_{2e} emissions in 'measurable' ways over a specified period of time:

Article 3, Paragraph 1:

> "These Parties included in Annex I shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do

[30] According to UNFCCC, sink is defined as "any process, activity, or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere" (UN, 1992b, p.7)
[31] According to UNFCCC, reservoir is defined as "a component or components of the climate system where a greenhouse gas or precursor of a greenhouse gas is stored" (UN, 1992b, p.7)
[32] Montreal Protocol was an earlier multilateral environmental treaty on 16 September 1987 (UNEP, 1987) which was on Substances that Deplete the Ozone Layer, adopted in Montreal and subsequently adjusted and amended (UN, 1998)

> not exceed their assigned amounts, calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B and in accordance with the provisions of this Article, with a view to reducing their overall emissions of such gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012" (UN, 1998, p.3).

Article 3, Paragraph 2:

> "Each Party included in Annex I shall, by 2005, have made demonstrable progress in achieving its commitments under this Protocol" (UN, 1998, p.3).

Annex A and B of the KP are enclosed as Appendix 3 and 4, respectively. However, although this is an international target, it is recognised that it may be necessary to take into account national circumstances in elaborating policies and measures to pursue the Convention's objectives and turn the KP's emission targets into reality (UN, 1998, p.2). At the same time, the environmental performance of states, in terms of CO_{2e} emissions and reduction, has to "be reported in a transparent and verifiable manner and reviewed" (UN, 1998, p.3). The UK was one of the Parties signing the protocol and committed itself to the target set of 8% emission reduction.[33]

At the end of the first commitment period of the KP, the Parties adopted the Doha Amendment to the Kyoto Protocol (DAKP) on 8 December 2012 in Doha, Qatar. The changes made to the KP through the Doha Amendment are explained in the following section.

[33] As earlier in Chapter 3 was mentioned, this study was also conducted in a second complementary organisational context, case B, in search for regularities. In regard to the KP, the headquarters of case B operating globally was based in the USA, the country which had signed the protocol and was one of the Parties but the target reduction of 7% for the US was not ratified by the US government.

4.1.2. The Doha Amendment

The KP was devised under the UNFCCC to compel countries, particularly industrialised ones, not only to eradicate their hazardous man-induced CO_{2e} emissions, but also to get control over them by reducing them to a quantified level within a defined time-frame. And as noted, according to this supposedly binding international target, the UK (the state where this project's case study is located, was supposed to cut its CO_{2e} by 8% below its 1990 levels.

Based on this amendment, the second commitment period of the KP started from 1 January 2013 until the end of 2020. The CO_{2e} emission reduction target increased from 5% to at least 18% below 1990 levels. A seventh item was added to the list of greenhouse gases, named Nitrogen Trifluoride (NF_3), which applied from the beginning of the second commitment. However there was now growing state resistance in one form or another. Canada ceased its membership of the Convention, while both Japan and the Russian Federation indicated that they were no longer interested in being committed to quantitative emission limitations or reduction commitments for the upcoming commitment period. Therefore, they remained as Parties with no binding targets for this period. It was agreed that the UK would be considered as part of the EU in a joint effort in cutting its CO_{2e}. The reduction target for the UK is 20% and for the EU is 30% (UN, 2012).

As the committed Parties, including the UK, are required to submit annual reports to the Conference of the Parties to ensure their compliance to the assigned CO_{2e} limitation, action is therefore required. The next section explores how the UK

engaged with the requirement under the UNFCCC and the KP system to tackle climate change.

4.2. National events in cutting-edge environmental problems

UK legislation in the early 2000's showed a series of efforts in relation to conserving the environment and switching to renewable energy resources as well as moving towards sustainable development. These include the Sustainable Energy Act 2003, the Energy Act 2004, and the Climate Change and Sustainable Energy Act 2006. However, in the following years some significant shifts occurred at governmental level. During the time that Gordon Brown was the Prime Minister of the UK (2007-2010), the Department of Energy and Climate Change (DECC) came into existence on 3 October 2008. This was the first UK government department which had 'climate change' as part of its title, and its first Secretary of State was Ed Miliband (3 October 2008 – 11 May 2010). Previous responsible departments had a range of other names. From 1974 to 1992 there was the Department of Energy (headed by the Secretary of State for Energy). This was abolished in 1992 and its core energy policy activities were merged into the Department of Trade and Industry (DTI). The DTI was then replaced in June 2007 by two departments named the Department of Business, Enterprise and Regulatory Reform (DBERR) and the Department of Innovation, Universities, and Skills (DIUS)[34]. The former of these had responsibility for UK energy policy prior to the establishment of DECC. Therefore, there were 16 years when there was neither a ministerial department for energy nor a department

[34] The DBERR and DIUS then replaced with the Department of Business, Innovation and Skills (DBIS) on 5 June 2009.

for climate change at all, before DECC was created on 3 October 2008. An Act was then enacted entitled the Climate Change Act 2008 (GB, 2008), which was, up to that time, the most central, concrete and exclusive legislation in the UK for tackling climate change through preventing and controlling levels of environmental harm.

4.2.1. The Climate Change Act 2008

The UK Parliament enacted the world's first ever Climate Change Act in 26 November 2008[35] because of needing "UK domestic action on climate change" which meant "reductions in the UK emissions of targeted greenhouse gases or increase in UK removals of such gases (or both)"[36] (ibid, Article 15).[37] A range of issues were addressed, including waste reduction (ibid, Articles 71-76), charges for single use carrier bags (ibid, Article 77), the use of renewable energy resources for transportation (ibid, Article 78), and efficiency and sustainability of civil estates (ibid, Article 86); however the most prominent concern addressed was the emission of greenhouse gases.

The Act introduced the concept of a 'carbon account', to be officially opened by the UK government on behalf of the whole country, which was to show how Britain was contributing to the increase or reduction of global greenhouse gas emissions. The list of greenhouse gases in the Climate Change Act 2008 (CCA 2008) was the same as those listed in Annex A of the KP; but the Secretary of the State had the power to

[35] It was first introduced to the UK Parliament as the Climate Change Bill on 14 November 2007.
[36] "Emission, in relation to a greenhouse gas, means emissions of that gas into the atmosphere that are attributed to human activity" (CCA 2008, Article 97).
[37] Although this Act covers the UK territory, there are some provisions addressing circumstantial differences between England, Wales, Scotland and Northern Ireland.

make changes both to the definitions of greenhouse gases and to the items listed in that definition, unless agreement or arrangement at European or international level was required (ibid, Article 92). In order to incorporate emissions from all these gases within one account, there had to be a standard measure of their emissions, reductions, and removals which was in tonnes of carbon dioxide equivalent (CO_{2e})[38] consistent with international carbon reporting practices[39] (ibid, Article 93). Pursuant to cutting emissions using the CO_{2e} metric, a series of related accounting or accounting-related terms was introduced in this Act. These included 'carbon target', 'baseline year', 'commitment period', 'carbon budget', 'budgetary period', 'carbon unit', and 'carbon accounting'; the ways in which these terms were then put to use, individually and together, will be explained in more detail during the rest of the chapter.

According to the CCA 2008, the net UK carbon account for the year 2050 needed to show that it was at least 80% lower than its 1990 baseline. Successive Secretaries of State for Energy and Climate Change were to set or amend this target so as to ensure that the UK should reach this target by the deadline set (ibid, Articles 1 and 2). An executive non-departmental public body was also established under the Act, named the Committee on Climate Change (CCC), with the duty of advising the government on emissions targets, carbon budgets, emissions from international aviation and

[38] A "tonne of carbon dioxide equivalent" means one metric tonne of carbon dioxide or an amount of any other greenhouse gas with an equivalent global warming potential (calculated consistently with international carbon reporting practice) (CCA 2008, Article 93).

[39] "International carbon reporting practice" means accepted practice in relation to reporting for the purposes of the protocols to the United Nations Framework Convention on Climate Change or such other agreements or arrangements at European or international level as the Secretary of State may specify by order (ibid, Article 94).

international shipping, and reporting to Parliament regularly on the progress made in reducing greenhouse gas emissions (ibid, Articles 32-38).

The first commitment period based on this Act was for 2008-2012 followed by further five-year periods covering 2013-2017 and 2018-2022. These time intervals were named the 'budgetary periods'. The Secretary of the State was to assign an amount for the net UK carbon amount as the 'carbon budget' which would indicate the net amount of CO_{2e} that the UK is allowed to emit into the atmosphere, an amount which must not exceed the carbon budget (ibid, Article 4). Therefore, the UK carbon account would show the 'net amount of carbon units' in its balance for each year and each budgetary period, to be calculated by taking into account the amount of carbon units credited to, and then less the amount of carbon units debited from, the net UK carbon account for the period (ibid, Article 11).

Thus in practice, what this meant was that the carbon budget was not just about designating a five-year period with a net amount of CO_{2e}. It also required the tracking of 'annual' progress through employing the concept of an 'annual equivalent' metric. This annual equivalent metric was defined as "the amount of the carbon budget for the period divided by the number of years in the period" and was operationalised on the basis that the carbon budget for the period (e.g. including 2020) must be at least 26% lower than the 1990 baseline. Moreover, this annual equivalent of carbon budget metric also incorporated a pre-defined numerical minimum and maximum according to which it must be –

i. lower than the 1990 baseline by at least the percentage so specified, or

ii. at least the minimum percentage so specified, and not more than the maximum percentage so specified, lower than the 1990 baseline.

Under this regulatory regime, the Secretary of State was to be responsible for setting carbon budgets, or exercising her/his power in amending them if it should be essential for reasons such as significant developments in scientific knowledge about climate change or European/international law or policy (ibid, Article 6). This was a way not only of meeting national targets but also satisfying the European and international commitments of the UK (ibid, Article 8).

The Secretary of State was also responsible for reporting the annual statement of UK emissions to Parliament covering the topics of UK annual emissions, removals, and net emissions of gases as well as the methods applied to measure or calculate those amounts along with comprehensive information showing any increase or decrease in the net amount of those gases compared to the previous year (ibid, Article 16). Moreover, the Secretary of State was responsible for taking action to pass regulations (not later than 6 April 2012) to ensure that all companies affected complied with the Act's requirements by including similar information (but as applicable to and consistent with their own environmental impacts) in their Directors' Report (ibid, Article 85). The Act also reveals that there was a requirement for reporting on reporting. So the Secretary of State was required to "report on contribution of reporting" before the Parliament. This responsibility was targeted on achieving the environmental objective of the UK Government through the use of good 'reporting practice' on greenhouse gas emissions (ibid, Article 84).

One consequence of The Act was to intensify regulatory and measurement activities at sector level. This can be seen to have been the case for the sector considered here: Higher Education in the UK. The university studied in this investigation provides evidence of the kind and level of the new activities that emerged.

4.3. Sector events in cutting-edge environmental problems

In the years prior to the CCA 2008, such activities were already underway. A voluntary pilot programme was introduced by the 'Carbon Trust'[40] in 2005 to be implemented in Higher Education Institutions (HEIs), and 20 universities then signed up to join in the programme, including University X. The programme was called the Higher Education Carbon Management (HECM) programme and was originated and directed by the Carbon Trust to achieve the following objectives as specified in the HECM 'toolkit' and adopted in University X documents:

- To change the current practices of HEIs, taking a whole-organisation approach, such that over the short to medium-term, carbon emissions become one of the issues that is automatically considered in regular management decision making across the full range of the HEI's operations, and;
- To undertake a series of interventions or projects that will lead directly to measurable emissions reductions.

[40] The Carbon Trust is a company limited by guarantee and registered in England and Wales. It was created in 2001 to work independently with governors, businesses, and the public sector, assisting them to reduce their carbon emissions and become a low-carbon company or organisation. It now has offices worldwide and acts globally. The Carbon Trust has been financially supported by different bodies such as the UK Department for Environment, Food and Rural Affairs (DEFRA), the DTI, the Scottish Executive (which is the Scottish government), the Welsh Assembly Government and Invest Northern Ireland. For more information, visit: http://www.carbontrust.com/ (Accessed on 25 April 2014)

As well as having the above objectives, this programme was expected to facilitate achieving the following outcomes as stated in University X's materials:

- Reduce carbon dioxide and the impacts of climate change
- Respond to Government pressure to reduce emissions
- Create a positive 'green' image for the university
- Continue energy conservation work already started
- Reduce energy costs and create savings elsewhere
- Allow the university to lead by example in the HE sector

Although the Carbon Trust was the organiser of this programme, each university was in charge of producing its own carbon management plan including a full carbon emissions baseline, plus a series of carbon saving projects to meet ambitious cost and carbon saving targets. The Carbon Trust collaborates with its clients e.g. HEIs to enable them to develop carbon management strategies to cut energy costs and carbon emissions via three main services: advice, foot-printing, and technology (Carbon Trust). University X received support from the Carbon Trust during five phases of this programme. This university submitted one document at the completion of each phase to the consultant team of the Carbon Trust. They were:

1. The Project Plan (May 2005)
2. The Case for Action (November 2005)
3. Opportunities Analysis (November 2005)
4. The Implementation Plan (March 2006)
5. 2020 Carbon Management Implementation Plan (March 2011)

Based on this carbon management plan, produced by University X and under the advice and support of the Carbon Trust, this university started a five-year carbon reduction process with the aim of decreasing campus CO_{2e} emissions by 10% over the period 2006-07 to 2010-11, to below the baseline of 2004-05 level which equals a 2% reduction each year. It was the first time that this university started an effort to control and decrease its environmental impact by quantified, measurable, and calculated amounts with a regular and traceable performance assessment with a baseline reference.

Moreover, the archival materials suggest that all activity with a possible environmental impact started to be considered in terms of carbon output and financial cost. Initially University X was concerned solely with reducing energy costs. However, eventually every project throughout this programme came into consideration from a carbon-saving perspective, too.

Additionally, this programme brought forth an 'organised effort' into University X regarding reducing the campus' environmental impacts and increasing energy efficiency. Before enrolling in the HECM programme, the university was concerned to a small degree with the environmental impacts of its business activity, for instance there was an Environmental Committee which had just four meetings per year. So, at campus level, this programme brought different groups and activities together to create a cohesive approach to carbon management. The way that these scattered endeavours became united will be shown in Chapter 5.

In parallel with the commencement of the HECM programme by the Carbon Trust, a series of consultations started within the HE sector (in January 2005). The Higher Education Funding Council for England (HEFCE) set out a series of consultations with heads of HEFCE-funded HEIs, and heads of universities in Northern Ireland. Those consultations were a response to a publication in September 2003 by the Department for Education and Skills (DES)[41] calling for a *Sustainable development action plan for Education and Skills*. The DES proposed an action plan around four objectives which included "the environmental impact of the education estate" (Clarke, 2003, p.6). One of the actions decribed under this objective was asking one of DES's national agencies, HEFCE, to work on advancing a sustainable development strategy for the HE sector through raising the issue in the Department's grant settlement letter (ibid, p.16).

In the document, Charles Clarke, the Secretary of State for DES announced "the work of the Sustainable Development Education Panel and its contribution to both the thinking and practice of sustainable development eductaion". In addition, he identified a 'new challenge' which was "to enable all citizens to exercise informed and responsible choices" (ibid, p.3) in relatin to improving sustainable development for the DES's national agencies including HEFCE.

Consequently, the HEFCE started a series of consultations on sustainable development within the HE sector with the purpose of 'policy development' which addressed heads of HEFCE-funded HEIs and heads of universities in Northern

[41] UK government department

Ireland.[42] The HEFCE pubished the first document of that consultation exercise in January 2005 with this purpose: "This is a consultation on our vision for, and plans to support, higher eductaion's contribution to sustainable development" (HEFCE, 2005b, p.1). The document was divided into two main parts covering (1) support strategy and (2) an action plan for sustainabe development, both in the HE sector. The HEFCE proposd its 'vision' through the first part of this document as following:

> "We intend to make sustainbable development a central part of our strategy for the future development of higher education. Our vision is that, within the next 10 years, the higher education sector in England will be recognised as a major contributor to society's efforts to achieve sustainability – through the skills and knowledge that its graduates learn and put into practice, and through its own strategies and operations" (ibid, Paragraph 29, p.7-8).

Additionally, the action plan clarified the position of the HEFCE as a supportive body with "a support role" in key areas (ibid, Paragraph 34, p.8).[43] Alongside outlining support strategies and HEFCE's support role, some actions were introduced, encouraging the sector to:

- Embed the principles of sustainable development in its values, strategies, operations and organisational learning
- Develop curricula, pedagogy and extra-curricular activities that enable students to develop the values, skills and knowledge to contribute to sustainable development

[42] Apart from direct recipients of this document, it was mentioned that it could also be of interest to those responsible for strategic management and governement at those universities.

[43] These key areas include: (1) Engaging with stakeholders to bring about policy synergies on sustainable development, (2) Building the capacity of people to manage sustainable development, (3) Sharing good practice, or supporting the development of good practice where none exists, (4) Rewarding more sustainable behaviour.

- Strengthen links to businesses, the community, civil society, government and others in pursuit of sustainable development
- Build new skills, knowledge and tools needed for sustainable development through research
- Continuously improve its own impacts on the environment, society and the economy.

Finally, holistic feedback was encouraged by 11 April 2005,[44] by including contacts comprising both academics and non-academic strategic managers who were also invited to join four seminars[45]. In this way HEFCE, on the one hand, clarified its role as supportive body and, on the other hand, encouraged universities' representatives to take part in a process of consultation, thus suggesting that HEIs were not being coerced into acting on the basis of outside prescription. On the contrary, they were being invited to have their say in a process of policy development and to contribute to the formation of carbon management discourse and action plans.

In July 2005, the HECE published a second document – a revised form of the first one published in January 2005 – after receiving the comments of universities. This demonstrated a high degree of agreement on the importance of the agenda, the key role of the HE sector as an important contributor to sustainable development, and the role of HEFCE in facilitating the sector's activities in that field; however, "with little

[44] Addressees were asked to share ideas around these four questions: (1) Will the proposed action plan help deliver the vision set out in our support strategy for sustainable development? (2) Which actions should take priority? (3) Do you have any other comments on the strategy or action plan? (4) What other activities are you engaged in which support the agenda for sustainable development?

[45] They were held on (i) 2 February 2005 in Manchester, (ii) 8 February 2005 in London, (iii) 16 February 2005 in London, and (iv) 4 March 2005 in Birmingham.

consensus about the best way forward" (HEFCE, 2005a, p.1). Consequently, HEFCE re-emphasised its 'supporting role' "to help institutions find their own way forward in relation with this agenda rather than attempting to dictate one approach to the sector as a whole, or suggesting that all institutions should seek the same outcomes in the same way" (ibid, p.5).

The document as a 'statement of policy' was simply a report for information and circulated amongst previous addressees. Through that, the HEFCE announced a two-year initial phase with objectives including "to build informed commitment to pursuing this agenda across all parts of the sector, including within HEFCE" (ibid, p.5) as the primary aim. The review of this approach at the end of 2007 when the phase would end was at HEFCE's schedule.

In June 2008, HEFCE published the third document with the aim of 'policy development' regarding sustainable development within the HE sector. That document had two purposes: (1) reporting the progress on an approach which came into action in July 2005 with the goal of promoting a sustainable development agenda to the HE sector and containing a strategic statement, ten-year vision, and a two-year action plan to the end of 2007 and (2) consultation on the updated strategic statement and action plan published in July 2005. HEFCE highlighted the ten-year vision with no change and still in consideration through that third document to the previous addressees – heads of HEFCE-funded HEIs and heads of universities in Northern Ireland[46]. Although the HEFCE seemed content with current practices and

[46] As HEFCE mentioned, that document could also be of interest to those responsible for strategic management and governance.

progress supported by Estates Management Statistics based on the results of a strategic review by HEFCE and independent researchers[47] on 'sustainable development in higher education in England', it took one further step forward and proposed 'continuity' and 'increase' of "momentum for change" for the HE sector to enable it "to play its full part in helping society meet the challenge of sustainable development" (HEFCE, 2008, p.4).

As HEFCE referred to 'Estates Management Statistics' the questions of 'what it was' and 'what it did' became crucial, especially when HEFCE mentioned it in terms of a 7% energy reduction consumed per student full-time equivalent (FTE) for the median institution between 2004-05 and 2006-07. Following this link brought me to the document *Greening Spires/Universities and the green agenda* published in January 2008 (five months before the issue of HEFCE's third document) by Universities UK, stating:

> "Over the past year AUDE [Association of University Directors of Estates] has also worked with HEFCE to develop Estates Management Statistics (EMS) to provide robust benchmarks for sustainability issues and carbon reduction measures. These include elements such as the amount of renewables generated, number of single occupancy car journeys and water supply borehole extraction. The new template has been issued and universities will complete their responses by the end of January 2008" (UniversitiesUK, 2008, p.40).

The step forward which HEFCE proposed as a sign of 'continuity' and 'increase' of "momentum for change" for the HE sector can be summarised in creating a baseline and setting a target – i.e. "a realistic target for carbon reductions which are sufficient

[47] 'The strategic review of sustainable development in higher education in England' was commissioned by HEFCE from the Policy Studies Institute, PA Consulting Group and the Centre for Research in Education and the Environment at the University of Bath and published in January 2008. It is available online at www.hefce.ac.uk under Publications/Research & evaluation.

to ensure satisfactory progress towards the government targets of reducing carbon emissions by 60 per cent against 1990 levels by 2050 and at least 26 per cent by 2020" (HEFCE, 2008, p.11).

However, setting a target for sustainable development at sector level did not mean universities and colleges had to follow a prescribed plan. On the contrary, creating a baseline for sustainable development at sector level enabled HEFCE to track the performance by measuring upcoming progress and highlighting what the sector was already doing (ibid, Paragraph 14, p.5); the "non-prescriptive" approach was given as "the best way to help institutions find the most appropriate way forward, rather than seeking to dictate or impose an artificial consistency across the sector" (ibid, Paragraph 15, p.5). Through that document, HEFCE talked directly about "the diversity of the contribution" amongst universities and colleges while there could be a 'numerical target' and 'measurable and calculated carbon reduction' in operation. Therefore, HEFCE asked recipients to share their opinions through attending three consultation seminars[48] and emailing their comments on a list of questions[49] to HEFCE by 5 September 2008.

[48] Three seminars in 2008 on 4 July (London), 8 July (London), and 18 July (Manchester).
[49] These questions were:

1. Do you agree that our vision is still appropriate and that the proposed objectives are sufficient to achieve this vision?
2. Is the proposed action plan fully aligned with, and sufficiently complete to deliver the vision?
3. Which action should take priority?
4. Do you feel that there are any other sustainable development activities which HEFCE could help support?
5. Are there any other ways in which you feel HEFCE could help promote sustainable development, in particular the non-environmental elements of the agenda? Views expressed need not be in the form of fully worked-up ideas.
6. Should there be a sector strategy for carbon management? If so what should it look like?

HEFCE's proposal on creating a baseline and setting a target in line with the UK government target (through its third document published in June 2008) resulted from the grant letter received from The Rt Hon John Denham – the Secretary of State for the Department for Innovation, Universities and Skills (DIUS) – on 18 January 2008 stating:

> "More generally, while higher education institutions have made some progress in reducing their carbon emissions, more needs to be done if the 2050 commitment to reduce emissions by 60% is to be achieved. I expect HEFCE to work with the sector to ensure these targets are met. Over the spending review, all institutions in receipt of capital funding should have plans to reduce carbon emissions, and performance against these plans should be a factor in future capital allocations. I would be grateful for a report on your plans for taking this forward by September 2008" (Denham, 2008, Paragraph 18, p.6).

The government target, which HEFCE and the Secretary of State for DIUS referred to, was based on the *Climate Change Bill* which was introduced to the Parliament on 14 November 2007, based on a 60% carbon emission reduction in the UK by 2050. However, it then came into force as an *Act* with an amendment of 80% carbon reduction by 2050 and at least 34% cut in carbon emissions by 2020 as against 1990 levels.

In brief, the Climate Change Bill was introduced to the Parliament in November 2007, on 18 January 2008 the government grant letter was delivered to HEFCE with the government's 2050 target, in June 2008 HEFCE's third consultation document

---

7. Could the sector reduce carbon emissions earlier than the government target for 2050, for example 60 per cent by 2030-2040? How should we deal with interim targets?
8. Do you have any other comments on the strategy or action plan?

was distributed with the government's targets, and CCA 2008 came into force five months later on 26 November 2008.

While the University X was going through the third year of the five-year Carbon Trust HECM programme, the forth document of HEFCE was circulated in February 2009 as the 'statement of policy', following previous documents with sustainable development policy for the HE sector. This new document was an updated strategic statement with complementary action plan after receiving feedback from the sector, and was then replaced with the older June 2005 version (the second document of this consultation series). More recipients were addressed this time, including Heads of HEFE-funded HEIs, Heads of universities in Northern Ireland, and it was noted, in a significant potential expansion of the network of those involved, that the initiative could also be of interest to those responsible for 'strategic management', 'governance', 'sustainable development' and 'environmental management'. These references to such parties perhaps indicated an intensification in business and management terminology, as well as identifying or naming new kinds of managerial 'key roles', e.g. those who are responsible for 'sustainable development' and 'environmental management'. Such role titles had not been specified in this kind of way in previous documents. This might have either been a matter of reacting to – or alternatively of seeking to encourage – the introduction or emergence of 'new players' across the HE sector and inside universities who were holding 'new positions' linked to cutting man-caused environmental damage. But in either case the change in vocabulary is worth noting. The next chapter will show how such people

within University X are generating solutions to environmental problems at their organisation.

HEFCE, through a fourth document (February 2009) issued as the updated statement of policy, announced that 'the vision' had been reviewed in accordance with feedback received from universities and that this revised version of 'vision' was as following:

> "Within the next 10 years, the higher education sector in this country will be recognised as a major contributor to society's efforts to achieve sustainability – through the skills and knowledge that its graduates learn and put into practice, its research and exchange of knowledge through business, community and public policy engagement, and through its own strategies and operations" (HEFCE, 2009, Paragraph 21, p.7).

That document included a strategic statement accompanied by an action plan with time-bound outcomes for some of the actions, and a decision to conduct a strategic review at the end of 2010-11 to evaluate the progress of this new updated approach. However, through that document, it was announced to the HE sector that the UK government target increased to 80% by 2050 and the government, through the grant letter dated 21 January 2009 and signed by the Secretary of State for DIUS[50], asked the sector to consider the new target instead of the old one:

> "In May 2008 I asked you to finalise during 2008-09 a strategy for sustainable development in HE, with a realistic target for carbon reduction that would reduce carbon emissions by 60 per cent against 1990 levels by 2050 and at least 26 per cent by 2020. This former target should now be upgraded to 80 per cent, in line with Parliament's decisions in passing the Climate Change Act 2008. I hope that some of the capital expenditure I have asked you to bring forward into 2009-10 will support strategic, long-term action to tackle climate change, but institution-wide strategies to reduce

[50] The Rt Hon John Denham MP

> carbon emissions are also needed" (Denham, 2009, Paragraph 19, p.5).

Based on this grant letter, another obligation – as stated below – about linking 'funding to performance against carbon management plans' came into action, which HEFCE announced that it would be considering in the next round of capital funding:

> "Last year, I set out our ambition that capital funding for institutions should be linked to performance in reducing emissions. Following your advice to me, I am now confirming that such links should be in place for 2011-12" (ibid, Paragraph 19, p.5).

Following this, in July 2009, a joint consultation through the fifth document was carried out by the HEFCE, UniversitiesUK , and GuildHE with heads of HEFCE-funded HEIs on developing a carbon reduction target and strategy for higher education in England, requesting emailed responses to HEFCE by 16 October 2009 (HEFCE et al., 2009). Although it was apparently just a consultation document, it was an invitation for HEIs to join and be part of a movement, which was consistent with the nature, essence, and soul of the university. Patricia Broadfoot, the Chair of UUK/GuildHE Sustainable Development Task Group and Alan Langlands, Chief Executive of HEFE, stated in the Forward of this document:

> "We hope that all institutions will want to be part of this effort and take opportunities to transfer learning, develop innovative and creative solutions and do what universities have always done – *change the way that we think and act*" (ibid, p.1, emphasis added).

By referring back to the CCA 2008 and legally binding target of at least 80% cuts in greenhouse gas emissions by 2050 and at least 34% by 2020 against a 1990 baseline and the obligation received by the Secretary of State grant letter on 21 January 2009, HEFCE highlighted the essentiality of having a realistic target for the HE sector to

contribute to. It also made reference to consultation work carried out by SQW[51], commissioned by HEFCE, to develop a carbon reduction target and strategy at the level of the HE sector (ibid, Paragraph 21, p.7) along with measuring the HE sector's carbon footprint in England (ibid, Paragraph 26, p.7) through collecting data by the use of 'statistic software' – i.e. mainly the EMS and the Hull Statistics for a subset of the full database (SQW, 2009, p.6). According to the SQW study, 1990 and 2006 have been identified as the carbon emissions baseline. Although "the 2006 baseline relies on more accurate data and is recommended as the basis for looking forward" (ibid, p.i), the 1990 baseline matches with national programmes under the KP. In this study, key sources of carbon emissions from the HE sector were identified, mainly energy, transport, and some others illustrated in Appendix 5.

Apart from that, SQW applied a type of classification by which emissions sources were categorised into three scopes. This classification was originally developed by the World Resources Institute (WRI).[52] In 2001, WRI published a document, which was revised in 2004, introducing the concept of 'scope' for greenhouse gases for accounting and reporting purposes in order to "help delineate direct and indirect emissions sources, improve transparency, and provide utility for different types of organisations and different types of climate policies and business goals" (WRI, 2004, p.25). Based on this classification, there are three scopes of 1, 2, and 3. Scope 1 includes emission of direct greenhouse gases caused from sources that are owned or

[51] SQW is a leading provider of research, analysis and advice on sustainable economic and social development for public, private and non-for-profit organisations. It was founded in Cambridge in 1983 by Nick Segal, Roger Quince, and Bill Wicksteed.

[52] WRI was founded in 1982. It operates as an organisation that provides policy research and analysis on global environmental and resource issues and their relationship to human societies and development.

controlled by the organisation. Scope 2 encompasses emission of indirect greenhouse gases from the generation of purchased electricity that is consumed in its owned or controlled equipment or operations. Other indirect greenhouse gases are covered under scope 3 (ibid, pp.24-29). More detail about these scopes is demonstrated in Appendix 6.

These scopes have been applied by SQW to calculate the HE carbon footprint, baseline, and a realistic target. Through this study, SQW made 25 recommendations to HEFCE including setting a high interim target of 50% carbon reduction in scope 1 and 2 by 2050 against the 1990 baseline equal with 57% reduction against 2006 levels. Moreover, "HEFCE's strategy should aim to 'dovetail' with available support and seek to build on external initiatives. It should work closely with the Carbon Trust to encourage those HEIs which have not already taken part to access the Higher Education Carbon Management programme", as recommended by SQW (ibid, Recommendation 6, p.ix-x).

HEFCE combined the above suggested target with the governmental target and then proposed a commitment to achieve a 34% carbon reduction in scope 1 and 2 by 2020 and 80% by 2050 against 1990 levels, whilst having a desire to achieve 50% carbon reduction in scope 1 and 2 by 2020 and 100% by 2050 against 1990 levels. Although accounting for scope 3 was optional, it was proposed in order to encourage commitments to decrease emissions in this scope and to improve measurements with the aim of setting a target (HEFCE et al., 2009, p.10-11).

HEFCE continued its consultation process by holding two seminars in 2009.[53] Following these they requested addressees to email their comments on a list of questions[54] to HEFCE by 16 October 2009. [It is worth noting again that this list now include individuals with 'procurement' responsibility which perhaps signals that new forms of duty were being added to already existing positions or that new designated posts were being introduced.]

As it was now well into the fourth year of the Carbon Trust initiative, HEFCE jointly with UniversitiesUK and GuildHE published a final document in January 2010 as the 'statement policy' for a carbon reduction target and strategy for the HE sector in England, which was re-published and up-dated in September 2010[55]. According to this document, a carbon reduction target for the HE sector was announced as agreed with universities through feedback received after the previous document; and this was now set at the same level as the UK national target – i.e. 80% carbon emission reduction by 2050 which is equal to a 34% reduction by 2020, both against the 1990 baseline. On the other hand, since a link between demonstrable carbon reduction by

[53] One of them was on September 3rd (London) and the other one was on September 7th (Manchester).

[54] The list included (HEFCE, 2009):

1. What should the sector target be for 2020 and 2050 and should there be milestones? If yes, what should these milestones be?
2. What should be the key elements of a strategy to support the HE targets and what should the role of HEFCE, UUK and GuildHE be?
3. Do you think that the monitoring and reporting arrangements in relation to the sector-level target are appropriate? How can the measurement of the sector's total carbon emissions be improved?
4. Do you have any comments on the guidance on developing carbon management plans? Is there a need for further support and guidance? If so, what is this?
5. HEFCE is required to link capital funding to performance against carbon management plans. Do you have any comments on how we will use CIF2 (paragraph 82) to assess this and how it should affect capital allocations? [CIF stands for Capital Investment Framework. The CIF2 refers to the revised CIF.]
6. Do you have any other comments?

[55] Updating the document was due to discovering an error in the original research report by SQW.

HEIs and future capital allocation had been requested by the Secretary of State and then established by HEFCE, the CIF2 was adapted to achieve this through satisfying the following requirements itemised by HEFCE et al (2010, p.26):

a. A carbon management policy or strategy – this could be part of a wider environmental/sustainability policy.
b. A carbon baseline for 2005 that covers all scope 1 and 2 emissions. This year is being used as a baseline because it is used for reporting against UK targets, and the SQW demonstrated that robust data for scope 1 and 2 is available for that year at institutional level. This will provide consistency across the sector against which progress can be monitored and reported. Institutions are encouraged to measure a baseline for scope 3 emissions and in the longer term we will expect these to be included.
c. Carbon reduction targets. These must:
    - Cover scope 1 and 2 emissions, although institutions may choose to set additional targets for wider aspects
    - Be set against a 2005 baseline. Institutions may choose to set their reductions in context by setting additional targets against an alternative baseline year
    - Be set to 2020, because this is the timescale for interim government targets. This will provide consistency across the sector against which progress can be monitored and reported. Institutions may also set interim milestones
    - Be publicly available.

d. An implementation plan to achieve absolute carbon emission reductions across scope 1, 2 and 3 including timescales and resources. These may cover capital projects and actions to embed carbon management within the institution, for example, through corporate strategy, communication and training.
e. Clear responsibilities for carbon management.
f. A commitment to monitor progress towards targets regularly and to report publicly annually.
g. The carbon management plan and targets must be signed off by the governing body.

Although there are some key requirements in order to be eligible to receive capital funding, HEFCE has not set any framework or approach as to 'how' any of these HEIs must act in practice because "HEFCE is not specifying how carbon plans should be developed or what they should contain" (ibid, p.26). This point was also clarified:

> "Each university and college will need to turn those national goals into institutional targets that can be measured over time against regular milestones. How they do so will vary considerably. An arts-focused university may have a very different carbon footprint from one with a strong science base. But the need to act is universal …" (ibid, p.1).

4.4. Legal mechanisms for cutting-edge environmental problems

To assist states and consequently organisations in cutting their CO_{2e} emissions systematically, some mechanisms have been created. One of the early ones is Climate Change Levy (CCL). It was introduced in the UK on 1 April 2001 and works through applying tax on the use of energy in industry, commerce, and the

public sector with the aim of acting as persuader and pushing energy users to cut their consumption and consequently their carbon footprint.

The well-known method is European Union Emission Trading Scheme (EU ETS). It was introduced by the KP, came into operation in January 2005, and was based on emissions emitted from fossil fuel and electricity energy sources. EU ETS, as the largest multi-country and multi-sector greenhouse gas emissions trading system in the world, has been applied as one of mechanisms under the KP to assist the EU to meet its international obligations. Member States' governments set the overall limit or 'cap' for the total amount of emissions allowed from all installations. The EU is allowed to emit greenhouse gas within a limitation. The overall permitted cap is converted to a number of carbon allowances, with each carbon allowance equalling one tonne of CO_2. In brief, the permitted cap is defined by a number, which represents how many tonnes of carbon are allowed to be emitted within a commitment period. If a country has emitted lower than the allocated allowance, it can sell the excess of that to others and make profit and if a country has not been able to perform within the allocated cap, it needs to buy extra units of allowances from others via a carbon market. Therefore, all countries act within a fixed amount of carbon allowance set within the EU, which may vary during other commitment periods (with downward trend and less carbon allowance).

Another scheme is the Carbon Reduction Commitment Energy Efficiency Scheme (CRC Scheme). This scheme, which works very similar to EU ETS and is run in the UK, covers those emissions resulting from electricity and not included in EU ETS. It is administered by the Environment Agency on behalf of DECC and therefore CRC-

registered organisations are required to report their energy consumption and associated CO_{2e} annually. Any non-compliance to the CRC scheme will cause financial and other penalties for CRC-qualified organisation (DECC, 2014).

4.5. Chapter summary

The investigation proceeded here by first problematising accounting as a potential way of promoting and implementing sustainable development, and then studying how accounting discourse and practices at a more micro-level could contribute to solving environmental problems in our era. This led the investigation towards identifying some of the key events that occurred in different settings and different detailed timescales, at global, national, sectoral, and organisational levels, but all within a same general timeframe. Analysing these events brings some points into light:

- Different bodies were involved in such events such as governmental and non-governmental organisations, politicians, national agencies, non-profit organisations, research bodies, etc. A range of experts have joined together to deal with these environmental issues. They are playing their specific and distinct role (such as researchers in SQW, consultants in Carbon Trust, politicians in DES, national agents in HEFCE etc.) in this collective effort to generate 'solutions' for environmental problems. This suggests that a huge discourse is going on and that experts with a wide range of disciplinary knowledges (including but not limited to the academic and management

representatives from HEIs) have contributed to the formation of this discourse.

- Also, whilst the inception of this discourse goes back to the early 1960s when Rachel Carson publicly raised the risk and danger of man-made environmental problems, the bold manifestation of this huge discourse started in the late 1990s when the Kyoto Protocol was agreed by politicians. And it is from then that a variety of these involved players (and knowledge and skills) has started expanding and this expansion still goes on. The next chapter will highlight this point.
- Moreover, all these diverse, but conjoint expertise share a common objective of managing/reducing environmental impacts and this signals the existence (or constitution) of a new knowledge frame in our era, which is centred or built on knowing that addressing environmental issues will decelerate the speed of climate change and finally cease global warming. This knowledge frame, *savoir* in Foucault's terminology, signals to the constitution of a new system of thought.
- A form of cost-benefit way of thinking is also perceivable in this new system of thought. For example, Brundtland's concept of Sustainable Development is a cost-benefit way of thinking in terms of present and future generations' ability to meet their needs. For politicians and legislators, this cost-benefit was seen in terms of carbon units and financial costs/penalties (e.g. in EU ETS, CRC, and CCL). Or for the national agency HEFCE, it was in terms of verifiable environmental development versus capital fund. The next chapter

will then investigate how a cost-benefit way of thinking is formed and defined by RPs.

- Governmental regulations with an upward trend emphasise the emergence of a new type of normality. These environmental standards have formed a collection of rules which differentiate what is an environmental problem from what is not, what is the permitted level of CO_{2e} emission from what is not, and what is green from what is not. This normality is due to change/modification in each defined period of time, because carbon allowances will decrease in its next phases.
- A new form of naming and counting is applied within this new knowledge frame, which is accompanied by the calculation of targets and baselines. Items such as gas and electricity that previously had been named and counted as cost objects, now became named and counted in terms of carbon units, which opened up new types of cost-benefit ways of thinking about the objects and issues concerned.
- An intriguing process of 'policy development' now progressed through (a) a series of consultations between HEFCE and representatives from HEIs, which led (b) to the formation of a carbon management implementation plan at University X with advisory support from the Carbon Trust and trial implementation of an HECM pilot programme, which involved (c) receiving the consulting, advisory, analytical and strategical recommendations from SQW in setting sector-wide carbon reduction target. This indicates how many different bodies and subjects (including subjects from HEIs) have taken part

in formulating and articulating the green discourse and action plan, as the manifestation of "what is to be done" (Burchell et al., 1991, p.84) to promote environmental performance both inside the organisational context of a particular university and across the HE sector in the UK as a whole; it can be seen to have taken place "by a long work of comings and goings, of exchanges, reflections, trials, different analyses" (ibid.) and not simply through a prescriptive discourse dictated from government. From the enactment of CCA 2008 (and its consequent compulsory emission-reduction targets) until the end of this research period, no fixed obligatory approach towards *achieving* governmental targets was dictated from above. On the contrary, each university was given a freedom to play its role as it saw fit, in (a) identifying its environmentally problematic areas, (b) setting its own internal targets (so long as these were compatible with government ones), and (c) designing its green strategy and action plan.

- In consequence HEFCE's emphasis on its role being a supportive one so that it was not dictating to universities regarding their approach made it possible for there to be a corresponding 'space of freedom' inside each specific university within which its RPs might operate. It did not guarantee such a space, since individual universities might operate their internal management in a highly directive and top-down style. However, I will look into the extent to which such a freedom space did operate within University X in the next chapter as I turn to studying the application of accounting-based technologies there.

- This chapter has therefore hinted at the emergence of some ‘new’ things which can be signs of growth in this new way of thinking in our era, such as seminars about sustainable development plans within the HE sector as well as developing EMS and naming/counting in carbon unit (which will also be discussed in following chapter).
- One final point the chapter has made is to signal the importance of the ‘contribution of reporting’ in achieving environmental objectives, which was raised in the CCA 2008 (Article 84). The next chapter will shed more light on the contribution that *writing* CSR-oriented documents and *reporting* on man-caused carbon emissions may make in order to render environmental objectives achievable. And it will focus particularly on what accounting is doing in this context.

Chapter 5: The Process of Truthing!

5. Introduction

The previous chapter studied some key external events which have contributed to a new focus on developing a range of environmental initiatives infused with or incorporating accounting statements (many of which construct new cost-benefit calculations with new 'objects' for naming and counting) and which therefore constitute a new kind of basis for the implementation of environmental accounting and disclosure practices. In so doing, it indicated one way in which the past is implicated in the present, and so offered a 'genealogical' dimension to the analysis, from the bottom up, of how specific accounting statements may be articulated and put to work within reports promoting environmental initiatives at an organisational level. This chapter proposes to narrow the focus of study to that organisational level in order to see how and how far the past is implicated in the present here too, particularly as RPs draw on their forms of expert knowledge and internalised modes of professional conduct as they enact the 'experience' of constructing such accounting statements and incorporating them into environmental reports and initiatives.

The objective here is to provide further insights concerning the question: 'How and how far are accountants and other practitioners implementing environmental accounting in practice and generating environmental information?' as it presents and discusses the process through which I followed and examined environmental accounting disclosure and practices in University X.

The chapter starts with the description of how the community of RPs was formed within University X, along with a summary presentation of more general information about the kind of organisation that University X is. Following that, I present what I have observed, heard, read, and learnt of 'what accounting did' when mobilised in University X.

5.1. Formation of the University X sustainability team

When I entered University X, I quickly established that its CSR-oriented documentation was produced by a small group of people who take part in measuring, generating, and recording environmental materials. This group I then denoted as Report Preparers (RPs) in my notes and in this dissertation. They joined the university at different times and as they did, the sustainability team gradually became bigger and developed its distinctive role, not least since such a team, with its differentiated positions and responsibilities did not exist before.

The inception of University X's sustainability team went back to the time when the university created a post of Utilities Project Engineer (UPE) in 2001, at which time the current postholder was appointed. He, with almost 13 years of working at this position, had become a form of 'mobile archive' who had many stories to tell about the many changes he had seen over this long period of time. According to what he said, energy monitoring at University X went back to the early or late 1980s and was done by somebody on a quite small 'amateurish' basis. He believed that "more and more of us know we never used to have much of an interest in saving energy" (UPE) and the energy audit at that time was like an "add-on" to other positions such as that

of an electrical/mechanical engineer who had a relevant background, and therefore was doing a bit of energy management. It was rather like the previously limited scope of health and safety, which was just covering organisations' officers but then became a role; the domain of energy management was very limited in those early days compared to the team that had developed up to the current time.

Key features of that development were as follows. In about May 2006, the first Environment Manager was hired by University X. This was a dedicated post and the role was primarily created as a result of signing up to the Carbon Trust pilot programme for HEIs discussed in Chapter 4, which the university had decided upon because of its obligations under the Climate Change Levy (CCL) introduced in April 2001, and the recognition that restrictions were going to get worse with the introduction of the EU ETS in 2005. Given the extra costs associated with energy consumption, the HECM plan was seen as a way of reducing these costs.[56] In December 2012 this postholder left as University X went through a restructuring process where his responsibilities merged into the job description of the Energy Manager, who then became Head of Energy and Sustainability. Despite that title change, he will still be called the Energy Manager in the rest of this thesis.

In September 2007, a second person was recruited as a Utilities Technical Assistant$_1$ (UTA$_1$). The appointee had graduated from University X in 2007 and it was his first

[56] According to a commissioned research done by SQW Consulting and SQW Energy for the Higher Education sector in England, the HEFCE also recommended in 2009 that appointing for similar posts such as carbon, energy, and/or sustainability manager with expertise in e.g. engineering was necessary to recover the skills deficit across the sector in putting their environmental programmes into action (SWQ, 2009, p.36). For more information, visit: http://www.hefce.ac.uk/media/hefce/content/pubs/2009/rd1609/rd16_09.pdf (Accessed on 24 April 2014)

full-time job after graduating, following on from a part-time job with the team that he had as a student. This meant that he had insight into the process of change and growth as the interview material shows. For instance, it was his view that there had always been a dialogue when they were going to purchase new equipment, air-conditioning, etc. because of being better or more efficient. However, that dialogue had been "not quite as intense as" had subsequently developed.

The team expanded again in 2008 when a Transport Manager joined University X to work on the transportation side of green performance. His post was initially for 2 years but it then became permanent, around the time that the Energy Manager took the lead role in the new Energy Management department. The Utilities Team, as one of sub-sections of the sustainability team, came under his control.

In March 2010 the number of people taking part in different stages of preparing University X's sustainability report increased again, when a Waste and Recycling Officer (later Manager) joined the Estates Department to manage issues regarding waste and recycling (I will introduce more on this department later). Although this post was grouped in the 'cleaning services' section of the Estates Department, this Manager was one of those RPs working in close relation with the sustainability team, particularly the Environment Manager. As with the Transport Manager, his position was created initially for 2 years and has the Waste and Recycling Officer title, but then changed when the post became permanent after 2 years. Despite this title change, the post remained located within Cleaning Services, however.

In October 2010, a UTA_2 was added to the Utility section of the team. In interview his recollection of his early days was not very positive because "there wasn't anything defined when I arrived … and things were rarely prescribed". However, my workplace observations indicated that the UTA_2 had now become deeply engaged in running environmental projects across the university and tracking their results in energy improvement by updating/monitoring his records (I will show a sample later).

To summarise, a Sustainability team had been constructed based on new posts with mainly new appointees: the team had responsibilities for (a) controlling man-made environmental impacts within and across the university to become a green university and (b) preparing reports on their environmental performance. Before the team's creation, the scope of sustainability work was very limited, especially from 2001 until 2006 when the UPE was doing the energy audit by himself. There had been, with the new roles, a greater specification of responsibilities and an intensification in activity, both suggesting the emergence of a new kind or level of 'sustainability discourse' within the Estates Department, but thereafter also in some potential ways across University X more generally – a discourse of what was becoming named as 'sustainable development'.

These RPs were employed to bring University X's environmental impacts under control and lead the whole university towards an improved green performance. However, it was a huge responsibility, especially because it was going to be put into action for the first time. Therefore, it caused me to ask myself 'what had happened that these people recognised themselves as expert, professional, and capable of

holding such positions and acting as subjects being in charge of taking environmental problems into account and composing environmental statements?'. The answer of this question was crucial to me, because it could help me understand how they were constituted as legitimate skilful subjects to handle this responsibility for the whole university. This part of investigation is covered in section 5.3 and its three sub-sections. Before that, to know more about the site itself, University X is described in the following section.

5.2. Context and background

This inquiry is carried out within a field or zone defined by the ownership boundaries of one particular university called University X. Walking around the campus of this university reminded me of a small town, with its entire infrastructures – a small town with its own power station, own postal system and own data network. In addition to the buildings of different schools and departments, library, laboratories, administrative and research-students' offices it also had other facilities on site. They were a pharmacy, sport centre, post office, art centre, cinema, theatre, concert hall, art gallery, music centre, bank branches, supermarket, hair salon, copy shop, bookshop, travel agency, restaurants and catering areas, cafés, bars, shops, residential areas, and conference centres. They all indicate that many activities take place with environmental impacts to one degree or another.

The number of taxis and buses passing through the streets of this university, plus the considerable number of car parks around the campus, highlight the importance of transportation within University X and a significant number of people commuting

to/from the university. Likewise, vehicles owned by University X were evident not only within the campus, but also in the streets of the city where the university is located. I had often witnessed a lady at the same bus stop being picked up by a university vehicle instead of by a bus. Bicycle racks also signalled that people travel by bike and bike riders were observed around campus. The number and size of buildings and population indicated high levels of energy and water demand, and waste. There was however plenty of green space with small lakes, wildlife and seasonal flowers.

UTA_1 stated that the university's cost of utilities was about £2 million a year going back to the time when the earliest sustainability team was developed, whilst at the time of this research it was more than £8.5 million; the upward increase in utilities costs has become an issue at University X. Construction of new buildings on campus implies an increase in energy consumption in the future as well. The significant gas and electricity consumption will also be contributing to air pollution.

This university (which equates to a small town) is managed by the Estates Department based in the Estates Office that is responsible for the effective management of the University X's land, buildings and holdings.

The way that the reception of the Estates Office was laid out and decorated indicated that this was a building where people worked on environmental issues. There was a TV screen at reception area showing some general materials constantly during work-time. It presented among other things the structure of the Estates department including the positions of the environment, transport, and energy managers. Brief

information enhanced with maps and graphics showed the territorial boundaries and geographical location of the university, and the objectives and projects of the Estates department. A sample of the successes achieved so far by the Estates team were also illustrated, with a focus on environment-related information (e.g. environmental projects). There were also certificates and awards on the wall behind the reception desk linked to the green performance of University X, but on different themes. These included awards for 'Low Carbon Vehicle Operator of the Year', 'Sustainable Transport and Green Travel Plans', 'Ground Maintenance', and the 'Green Gown Award' for the continuous improvement and exceptional sustainability initiatives being undertaken.

The Estates Office was a big open-plan office with approximately ninety staff covering a range of responsibilities (e.g. ground/garden maintenance, refurbishment and construction of new buildings, internal estates finance and resources, the Post system, furniture, purchase and installation etc.). Within Estates, the sustainability team was responsible for promoting environmental performance, cutting GHG emissions, ensuring the efficient use of utilities and encouraging energy conservation across the campus. To undertake the differing responsibilities regarding controlling and decreasing environmental problems, the team was divided into three sub-sections: 'utilities', 'transport', and the 'environment' directed by the energy, transport, and environment managers, respectively. This initially suggested that environmental problems at University X originated from different sources and were perhaps measured and counted by dissimilar methodologies.

In the next section, I will explore how these RPs have become legitimate skilful experts in bringing control over environmental problems by getting involved in the 'experience' of environmental accounting implementation.

5.3. How a university becomes a 'green-accountable self'

The university's environmental issues were in a key respect the direct responsibility of the RPs, as implementers of environmental accounting and disclosure practices and writers of University X's environmental reports. Their role was to lead the university towards becoming a green organisation causing less environmental harm while also increasing lower consequent financial costs. It is, however, crucial to understand how the 'experience' of bringing "control over things" (Foucault, 2000b, p.318) such as man-induced environmental problems at this university (which was composed of a large number of thinking/acting staff/students) via forms of accounting came into play. Furthermore it is argued here that such understanding needs to take into account how new forms of 'thinking and acting' were articulated and acted out. It was this which centrally had to be made to happen by the RPs as subjects, as those who would not only have relevant skills and knowledge, but also would, in various ways and to differing extents, make themselves into individuals personally aware of, and committed to, environmentally friendly ways of thinking, acting, and living.

Therefore, to explore how the 'experience' of environmental accounting implementation was made to happen at this university, I started the investigation

from the level of "what 'was done'" (Florence, 2000, p.462), by seeking to observe what the RPs were doing and how they were doing it.

5.3.1. Birth of the 'green-accountable self'

To find out how these individuals were constituted or recognised themselves as legitimate and expert subjects of implementing environmental accounting practices and preparing CSR-oriented reports, I narrowed down the "historical investigation into the events" (Foucault, 2000b, p.315) that had led RPs to such constitution and recognition about themselves. To an extent, this historico-critical study sought to learn about the previous lives and experiences of RPs, by asking them about how they had (a) become environmentally aware and (b) become expert in accounting means for controlling or seeking to control man-caused environmental damage. This objective was pursued via semi-structured interviews.

Personal interest featured as one motivation amongst RPs for paying more attention to the environment. UTA_2, who was a mechanical engineer, had a project engineering and management background. Due to personal interest, he had decided to do a Master's degree in 'Sustainable Low Carbon Building Design' as a way to link environmental concepts to his previous engineering career. UTA_2 said that this decision arose because he had always been environmentally conscious and motivated.

The Energy Manager had a similar story. He had a personal interest in the field of environmental sustainability, and in his previous role as a quality manager in the automotive industry, had been indirectly involved with environmental matters for 20

years. However, he decided to change his job by joining University X to be directly engaged in, and work closer to, the environment and energy sector for the first time in his career. He said:

> "I didn't like the fact that the automotive industry is cost-driven and the shareholder is profit-driven which puts a lot of pressure on people and can have an adverse effect on the quality of product and cars we all buy and to the consequence of maybe having some accidents some of product we cause [sic]…. I left my previous job because I didn't like it and I joined here because I liked it and it is not because of money, fortunately. I had much better money in my previous job but I left it…. [and in case of any new possible job offer in future] if it was with the same condition and the same salary, I would certainly stay here".

These career-path changes were clearly self-motivated. Working within the automotive sector was something the Energy Manager did not enjoy, where he saw no reasonable balance between cost-benefit rationales and consumers' rights (which was potentially against the notion of sustainability).

Although the Energy Manager, like others, would like to be (and be recognised as) green, there were areas where he felt that he was not being environmentally friendly, such as driving to work. However he believed that his lifestyle, in general, was already aligned to what he was saying, and that was the reason for him changing his job. He was highly interested in energy conservation and this was for him basically rooted in his family background. His family culture had provided him with a sort of life education in "being aware of waste and not using too much" (Energy Manager). Traces of parents' influence on RPs was highlighted when the Waste and Recycling Manager was educated as a child by his mother to appreciate the value of food, as he stated.

UPE was another RP who believed that he had always been aware of energy conservation, even prior to the start of his role at University X's sustainability team. He claimed so because he "always wanted to save money at home in energy" (UPE). He believed that it was originally rooted in financial interest, like a lot of people trying to make savings. Although he said he had 'always' been interested in saving energy to save money, he also mentioned that for 17 years he had been aware of the impact of energy consumption on the environment.

This suggested to me that his rationale in conserving energy was initially derived from the matter of price/cost, which was compounded when he referred to his previous career, working as an electrical engineer in a large factory. At that time especially in industry, he said, "energy management wasn't such an issue". Yet, academic knowledge, skills, and industrial experience in the field of electrical engineering and mechanical trainings on mechanical systems had helped him to adapt to the role he had taken on at University X. The recent increased sophistication in energy management at the university, in contrast to his previous job, had given him a new way of looking at, and talking about, energy when he said:

> "If you wanna save carbon, then internally you're saving money…. Obviously in turn, if you save in financial interest, you're saving carbon because the two go hand-in-hand".

His thinking had changed, and whereas before for him saving energy was equal to saving money, now 'carbon' has taken the place of 'energy' which signalled to me an association of environmental consequences of energy, which could be the influence of his recent university career.

The UTA_1, another RP, believed he had always been, in some ways, a green person. However, he referred the start of his growth in green-ness back to his senior year at university when he was running a project for his Master's degree in Physics. He used liquid helium and liquid nitrogen for his experimental project, which was very expensive. It was at that point that he started to consider the use of resources carefully because it cost several thousand pounds for just one experiment. Although it was the start of becoming more resource-aware, working in University X's utility team "kind of escalated it more to what I am now, just simply by exposure to different technologies, ways of thinking and of course analysis", UTA_1 said. This statement, as well as UPE's development above, suggests growth in the constitution of these individuals as skilful legitimate subjects as RP – i.e. being in charge of implementing environmental accounting practices and writing environmental reports.

Furthermore, academic studies seem to have had influence on the RPs' awareness of the value of energy resources and the environment, with academic major subjects influencing accordingly, also. Engineering degrees were prevalent, e.g. UTA_2 studied mechanical engineering, UPE – electrical engineering with training in mechanical systems, Energy Manager – thermodynamics[57], and Waste and Recycling Manager – civil and environmental engineering. Although all of them stated they were benefiting from their specialised scientific area, it was not the only field of academic study to (a) make them more conscious about the environment and its resources and (b) helping them in the way they were managing and taking the

[57] As the Energy Manager explained, thermodynamics was about "everything that energy has to do with in terms of heating, cooling, and fluid mechanism", understanding the transformation of energies between fluid, equipment, and materials.

university's environmental impacts into account. The Environment Manager, UTA_2, and Waste and Recycling Manager had also done an 'Ecology' degree, a Master's degree in 'Sustainable Low Carbon Building Design', and a Master's degree in 'Waste Management with Environmental Management' respectively, through which they were further able to bridge their skills to what they were doing. However, the role of academic education was not limited to the specialised knowledge *per se* given to RPs. It had provided RPs with new perspectives of looking at things. The UTA_1's experience in this matter was interesting.

UTA_1 did a Physics Master Degree at University X and graduated in 2007. At the same time, he was also doing an electrician's qualification. They both, at the same time, had empowered him in two ways. Having the theory of Physics together with practical skills training, he was able to bring these combined skills to bear on his areas of work e.g. monitoring University X's energy consumption. Although he believed engineering to be more linked to environmental concepts, the "theoretical kind of scientific background" he had gained from doing Physics was effectively assisting him in his work in the Estates Office. Physics material, UTA_1 explained, was more theoretical and abstract in comparison with engineering studies, and had resulted in getting involved with high mathematical-weight of materials and rigorous forms of analysis, which he was translating to aspects of his current work, e.g. how they could make a specific place more energy efficient. His Physics major assisted with delivering "a kind of the methodology" (UTA_1) and not necessarily content knowledge. He explained:

> "It is how you have been trained and I think it has been the same for being in any Physics degree, any engineering degree, any of those scientific backgrounds. It is the method. It is the way you are thinking which is different, potentially different to, or distinct compared to what you actually know".

Therefore, the way he was trained through doing Physics degree had given him "a kind of trained thinking" (UTA_1) by which he had found a new standpoint to look at external factors (e.g. energy and water). This approach was practically manifested in his work when developing business cases, carrying out analysis on energy, and monitoring data streams, he said.

Despite all being educated to a certain standard, the technical skills they have acquired are quite different. Despite this diversity in skills and the ways in which they have learnt about value of the environment, they are contributing to one objective of 'sustainable development' within and across the university. With this knowledge about RPs, the next section will show how they were applying accounting and disclosure practices to monitor and manage environmental problems.

5.3.2. In the beginning, it was about compliance

Being nationally obliged to cut its emissions aligned with the UK CCA 2008 – i.e. 80% by 2050 and 34% by 2020 against 1990 baseline – University X as a member of the public sector was subject to present demonstrable emission reduction. According to Chapter 4, meeting the legally-required reduction defined by categories of scope 1 and 2 against 2005 baseline for reporting purposes was the basic standard, which every single university had to achieve. There was no prohibition or forbiddance for HEIs to set their own additional targets, though.

University X's environmental impacts were categorised under utilities (energy and water), transport, waste and ecosystem. Utilities had been of concern for a longer period of time, and energy was mainly monitored in terms of 'efficiency' with the aimed outcome of cost reduction. However, the important point was that environmental sustainability and corporate social responsibility only became an issue in recent years, according to university documents and interviews with two staff: UPE, who had direct experience through his work, and the Chief Sustainability Officer of case B (briefly explained in Chapter 3 and Appendix 11) who had studied at this university as a Master's student during 1984-85.

Over time, the RP roles evolved into 'compliance' roles as affected by CCL, EU ETS, the complying power-quality assurance, display certificates, and CRC (which were described in Chapter 4). Despite this, they were still "within the emperor of energy management" (UPE) because "energy management … is a pretty dynamic changing role anyway with new technologies emerging [and] evaluating those" (UPE). The increase in legislation in recent years had made energy management more complicated and sophisticated and so had led to the increase in the number of people in the sustainability team. All this impacted on the level of sophistication of what RPs had to do, insofar as RPs had felt being in need of training – not only for learning how to use specific new reporting software but also in terms of receiving training and support via seminars and/or conferences to learn about governmental legislation and compliance issues. They were concerned that otherwise they might end up infringing the law without being aware of it. In this regard, UTA_1 said:

> "You know, it's not just 'am I doing things that don't make sense?'. You know, 'am I actually gonna break the law if I do this wrong?'".

This indicated how far RPs thought simultaneously about environmental performance issues and potential legal (and financial) costs or penalties. This also indicated that a quite broadly-framed form of cost-benefit thinking was being brought to bear on both problems and solutions, taking into account such schemes as EU ETS, CRC, and CCL.

One factor I could see at play here was the increased significance of the government's hand in controlling environmental problems. This signalled to me the importance of seeking to find out more about the level of 'freedom' that RPs had, in actively making sense of university's environmental performance, to operate in conjunction with compliance to legislation. Here was a potential area where concern for the environment ran up against potentially complex issues concerning the law and 'illegalities' in modern society. Just as polluters were potential law breakers (as could be a factor in operating a 'polluter pays' principle), so also those pursuing environmental solutions could be, even though under different laws concerning different issues of compliance. The borders of such 'unlawfulness' could be seen as being defined, as set out in the CCA 2008 (explained in Chapter 4), in terms of failing to hit certain levels of target as specified through the accounting-based constructs of 'carbon budget', 'carbon credit', and 'carbon period'. Where the amount of emitted carbon had fallen between the defined minimum and maximum limits of the performance spectrum in line with the minimum annual expectation, it would be considered legal. Beyond these bounds lay differing types and levels of 'illegality'. Therefore, for RPs it was crucial to understand how accounting could

and did act (or fail to act) to bring the occurrence of such incidents under control and within the legal zone.

So I started following accounting. The first place that accounting appeared was where the number of consumed units of, for example, natural gas, electricity, and water was counted. This counting was embodied by meters, which suppliers had installed at the university. Therefore, the whole quantity of used water, electricity, and natural gas at University X was recorded by meters and written in invoices, sent from suppliers to the university. As explained in Chapter 4, this university had to report its reduction performance in carbon emission to HEFCE to be eligible to have access to capital funding, and these numbers were used for this purpose. Due to this legal requirement, University X was reporting to HESA via EMS, which was at university-wide level and all universities of the country had to report to.

Here I found another way of cost-benefit thinking, which was influenced by HEFCE in terms of verified environmental development against capital fund, which was working as an incentive for RPs motivating them to take their environmental incidents into account in a written form.

The EMS was managed by HESA, with comprehensive and fixed format including the list of items all universities had to report on them, and utilities was only one element of those statistics (Figure 2).[58]

[58] A template of EMS is downloadable from here: http://www.hesa.ac.uk/dox/datacoll/C09042/HESA_EMS_Template_2009_2010_C09042.xls?v=8b273cc6ded508a30778808113e72f33 (Accessed on 3 May 2014)

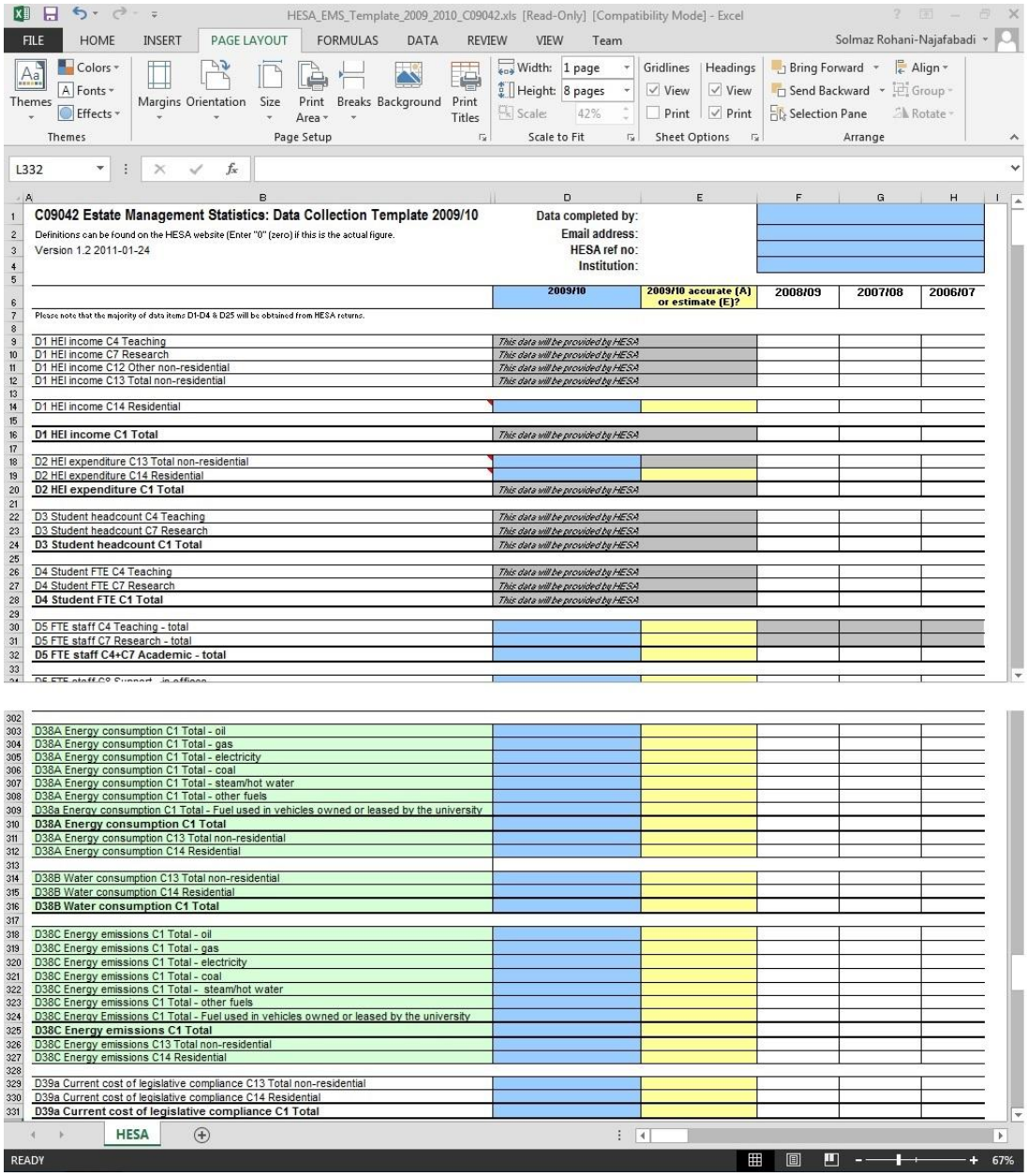


Figure 2: Sample parts of EMS (for University X) covering titles and energy consumption and carbon emission – Source: HESA website

Shown above is a template of EMS with sections on energy and emission including a wide-range of statistical data of which utilities is only one aspect and had to be submitted annually. In more detail, it is asking for energy (e.g. oil, gas, electricity, coal, steam/hot water, other fuels) and water costs/consumption in residential and

non-residential sites, waste, transport, and emissions resulted from all energy sources at the university. Witnessing UTA_1 while sitting next to him and he was digging into his files and spreadsheets to retrieve data and feed into EMS, it seemed to me that data stored in EMS was prescriptive and historical due to its defined format and being backward looking. I will later explain more how this detailed information was generated.

This information was not considered in isolation, though. These raw environmental data were 'normalised' in accordance with other types of collected information such as the number of full-time equivalent students, full-time equivalent staff, the area of the campus, floor space, etc – data that other groups/departments have provided e.g. number of international students by the International Office. This normalisation was applied both at university level by RPs and at national level by HEFCE. However, I sometimes saw some inaccuracies in the normalising process. For example, this university was open for conferences. Therefore, throughout the summer holiday, they could have 10,000 people on site attending conferences and they were all using, say, water. This situation was neither the same as the majority of UK's universities nor was the number of conference delegates taken into account. Hence, University X looked poor for water consumption due to inaccurate normalisation.

Being required to cut its emissions aligning with 80% national target on carbon reduction and meeting legal requirements in reporting certain data had made the RPs consider the importance of doing something to bring the university's emissions under control. It was at this stage that the RPs revealed they had recognised

themselves as ‘active subjects’ in playing key roles in the environmental-sustainability field, in terms of compliance. UPE, for example, expressed about himself:

> “I’ve got a reasonably key role, specifically responsible for compliance issues. And that’s compliance issues [that] must be done for its reasons, otherwise you find yourself in the court of law. So, I feel the role I’m doing is quite responsible and it’s a major part of the average team. … we must do this, we must do that, before we could even think about doing projects or even reading meters, but those issues must be covered” (UPE).

It implied that this active-ness of RPs in generating sustainable solutions was created or constituted under the influence of governmental power, which was mobilised by, and manifested in shape and form of, accounting practices and numbers. In other words, the RPs had found themselves surrounded by (a) imposed ‘numerical targets’ which (b) they had to be met by a certain ‘deadline’, and (c) writing ‘reports’ on their performance on a regular basis available for public and authority bodies. This situation suggested to me that they had no alternative but to learn to strategise greenly. My provisional understanding that this state of being ‘active’ was caused by the pressure of compliance was amplified when I noticed they had asked the team of internal audit at University X to do an internal audit on their reports before submitting to external verifiers on behalf of authority bodies. I observed an internal auditor came to the Estates Office and examined their materials, including numbers in invoices with reports prepared for the external verifier.

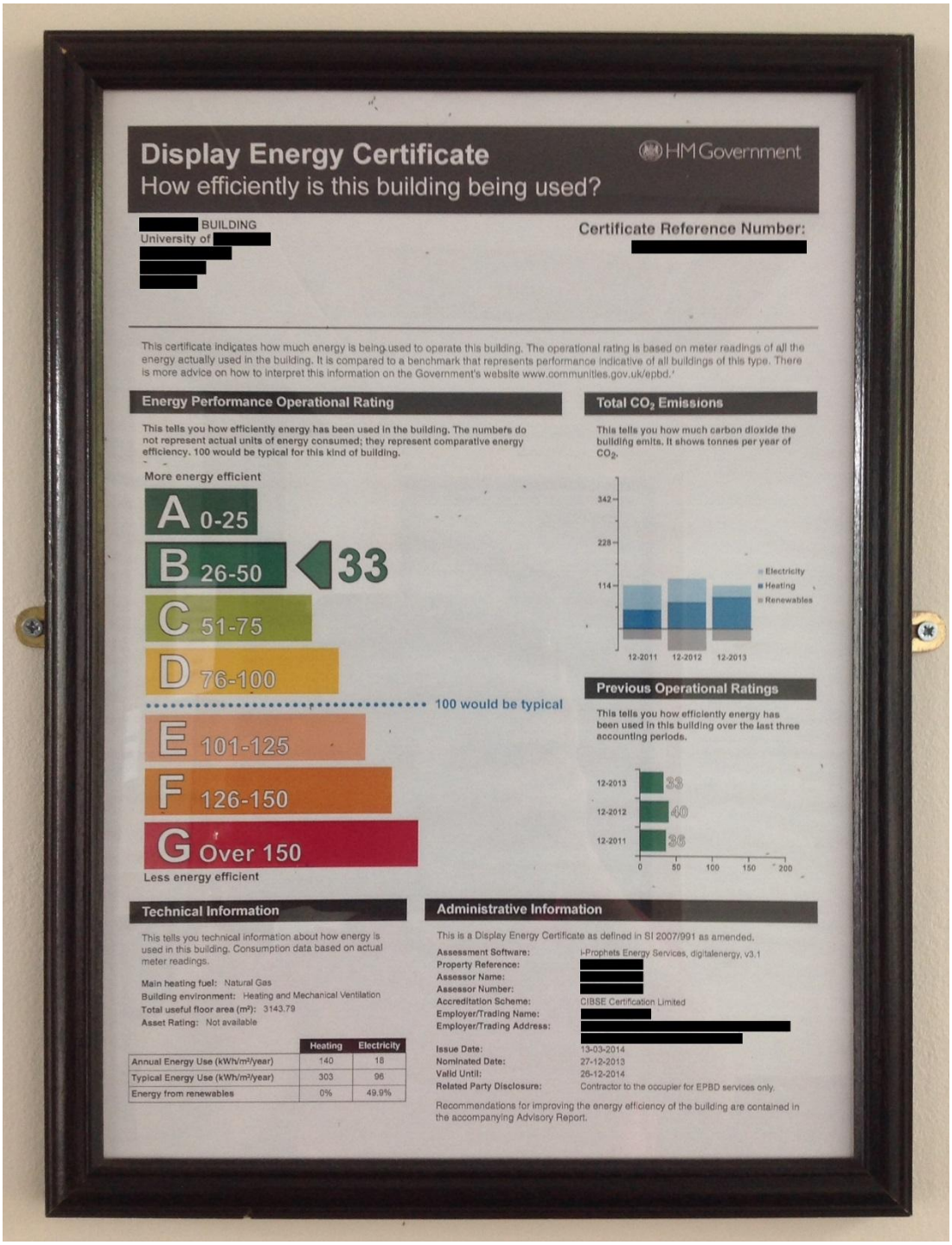
Moreover, this restriction in the permitted level of GHG emissions has also made them active subjects in turning this risky situation to an opportunity, which was motivating them to run the university in as green a way as possible. I saw this active-

ness when I observed the RP's motivation in terms of emitting less carbon units and gaining profit by selling their excess in carbon markets. This signalled a form of cost-benefit way of thinking in play which could result in fewer emissions for this university and affecting their decision-making in process of their environmental problem-solving.

These numerical requirements as mentioned above had not surrounded this university as one organisational unit. They had permeated further down across, and within, the university. According to 'The Energy Performance of Buildings (Certificates and Inspections) (England and Wales) Regulations 2007'[59] (EPBCI), a Display Energy Certificate (DEC) was legally required, with annual renewal, for those buildings which fell under defined characteristics[60]. In this regard, RPs must provide DECs for University X's buildings on an annual basis and make it visible to the public at all times in a prominent place (GB, 2007, p.9). The DEC of one of university buildings, as shown in Figure 3, was a kind of environmental statement revealing the energy performance at that building through a combination of accounting numbers, colours and rating, valid for one year. It was accompanied by an advisory report valid for 7 years with no requirement to be publicly visible. Any failure in providing this public statement would result in financial penalty (GB, 2007, p.17).

[59] For more information, visit: http://www.legislation.gov.uk/uksi/2007/991/pdfs/uksi_20070991_en.pdf (Accessed on 5 May 2014)

[60] "This regulation applies to buildings with a total useful floor area over 1,000m^2 occupied by public authorities and by institutions providing public services to a large number of persons and therefore frequently visited by those persons" (GB, 2007, p.9).



Display Energy Certificate

How efficiently is this building being used?

HM Government

[redacted] BUILDING
University of [redacted]

Certificate Reference Number: [redacted]

This certificate indicates how much energy is being used to operate this building. The operational rating is based on meter readings of all the energy actually used in the building. It is compared to a benchmark that represents performance indicative of all buildings of this type. There is more advice on how to interpret this information on the Government's website www.communities.gov.uk/epbd.

Energy Performance Operational Rating

This tells you how efficiently energy has been used in the building. The numbers do not represent actual units of energy consumed; they represent comparative energy efficiency. 100 would be typical for this kind of building.

More energy efficient

A 0-25
B 26-50 ◀ 33
C 51-75
D 76-100
100 would be typical
E 101-125
F 126-150
G Over 150

Less energy efficient

Total CO_2 Emissions

This tells you how much carbon dioxide the building emits. It shows tonnes per year of CO_2.

Previous Operational Ratings

This tells you how efficiently energy has been used in this building over the last three accounting periods.

Technical Information

This tells you technical information about how energy is used in this building. Consumption data based on actual meter readings.

Main heating fuel: Natural Gas
Building environment: Heating and Mechanical Ventilation
Total useful floor area (m^2): 3143.79
Asset Rating: Not available

	Heating	Electricity
Annual Energy Use (kWh/m^2/year)	140	18
Typical Energy Use (kWh/m^2/year)	303	96
Energy from renewables	0%	49.9%

Administrative Information

This is a Display Energy Certificate as defined in SI 2007/991 as amended.

Assessment Software: i-Prophets Energy Services, digitalenergy, v3.1
Property Reference: [redacted]
Assessor Name: [redacted]
Assessor Number: [redacted]
Accreditation Scheme: CIBSE Certification Limited
Employer/Trading Name: [redacted]
Employer/Trading Address: [redacted]
Issue Date: 13-03-2014
Nominated Date: 27-12-2013
Valid Until: 26-12-2014
Related Party Disclosure: Contractor to the occupier for EPBD services only.

Recommendations for improving the energy efficiency of the building are contained in the accompanying Advisory Report.

Figure 3: DEC of one of the university buildings - Photo credit: author

Although this form of publicly available environmental statement is prepared by governmental accredited external assessors, the required raw data is produced by RPs, which will be shown later. However, they were not totally blind about how this DEC was produced. They had access to guidelines regarding every part of this statement and what these numbers would mean (Appendix 7). This implies that their experience of implementing environmental accounting and reporting was improving with the help of such guidelines.

Furthermore, another indication here is the way in which this environmental statement works and what it does. It seems to give 'new understanding' about (a) patterns of energy consumption, (b) the impact of its emissions on the environment, and (c) its energy behaviour in analogy with other typical buildings of similar type. For example, Figure 3 shows that building X was rated 33 whilst the typical rate for that type of building was 100. By reading this numerical, colourful, ranked statement I found myself (as observer and not pure researcher) become aware that everyone's behaviour, myself included, will impact on the energy ranking of this and every other building . This 'new understanding' for RPs seems to be an environmental true and false, implying the higher position the number, the greener they are and *vice versa*.

In general, the increase in environmental sophistication caused by a growth in the number of legislations had an impact on the way in which RPs were working. I observed that they were sometimes so busy with what they were doing and how they were doing it. All the legally-required administration was taking a considerable

amount of time, insofar as "sometimes we don't actually have the time or resources to actually think of: 'actually we could be doing this differently'", UTA_1 said. This dissatisfaction or concern was also about "how we're reporting on things" (UTA_1). Referring back to the EMS and DEC format and looking at the type of environmental information they were presenting suggested that what the RPs were reporting on and how they were writing their environmental statements was originally formed by the legal requirements, which could "get [RPs] a little bit fixed…and …we end up with being so busy that you don't actually have time to innovate sometimes" (UTA_1). Based on what I heard and observed at this stage of the investigation, this requirement to be 'active writers' of, for example, EMS and DEC within their 'restrictive' formats seemed to work against the RPs ability to think/act/strategise.

Finally, this part of the investigation was an attempt to show (a) one piece of contemporary reality – i.e. the 'historical *a priori*' within which RPs were thinking, acting, and strategising – (b) the forms of power that they were submitted to, and consequently (c) how these RPs were codified by a set of environmental rules in the process of problem-solving. This part of the investigation suggests that the formation and constitution of RPs as expert subjects in generating environmental statements is influenced by environmental codifications not merely in terms of compliance; but also in how to measure, and write/record University X's environmental incidents as well as how to read and interpret those documents that external assessors had produced by using raw numbers already produced by RPs.

Put differently, the RPs started learning to play (or play within) an 'environmental truth game' by means of guidelines, advice, and consultation on how they could apply more economical, efficient, and environmentally effective technologies to cut negative environmental impacts as defined by key accounting-derived targets. They had to engage with forms of instruction on how they should name and count and write their environmental incidents. For example, they learnt how to name and count in carbon units and to make this translation happen. It meant that they started learning to differentiate within these terms what is an 'environment problem' from what is not, what is green from what is not. This was an experience where the 'environmental or green truth game' entailed learning to apply an appropriate form (sometimes narrowly conceived, sometimes broadly) of cost-benefit thinking when deciding which equipment would be the most environmentally effective compared to other similar ones. This could arguably also be seen as a form of 'ethical' conduct, insofar as there was a concern to respect rules (and law) but in ways that would optimise positive environmental outcomes, as measurable through the cost-benefit matrix.

The following section seek to show how these RPs learnt, within this form of 'ethical conduct' bringing together accounting and a search for optimal environmental outcomes, to 'strategise greenly' whilst implementing environmental accounting practices and translating governmental standards into local ways of environmental problem-solving.

5.3.3. Learning to think and act 'greenly' through ac-counting

We have seen how personal histories link, in various ways, to the typical ways of thinking and acting of the RPs studied here. We have also reviewed how they found ways of building on these ways of thinking and acting in constructing and negotiating their roles within University X's sustainability team, discovering ways of active engaging with environmental problems via accounting-based practices within a framework of law and potential 'illegalities', all of which was relevant to their own 'accountability' in terms of ways of reporting on their own performance. This active-ness, it has been argued, resulted in the establishment of a close and dynamic interplay between RPs and accounting practices. This chapter section seeks to show how the RPs learned, across this activity and its associated ways of thinking, to strategise greenly through this dynamic relation with accounting practices.

The RPs had become aware of two points: (a) they were employed to cut University X's contribution to climate change, and (b) they had to be committed to, and aligned with, the law as set out in the CCA 2008, and compliant with related legal requirements (e.g. EU ETS), against which they would be assessed. Therefore, for instance, they had to purchase carbon credits if emitting more than their carbon budget. However such purchases were costly, and this was something they wished to avoid if possible.

This dis-satisfaction was accompanied by an intensifying administrative burden for the RPs, writing environmental data in detail and re-writing them in different formats for annual reports, auditing phases, etc. Being in that situation had led them to think

more about what to do to cut their carbon as much as possible and run University X within the environmentally legal limit. This step towards 'thinking more' was associated with HEFCE's advice, as mentioned in Chapter 4, that there was no best practice and each university had to find for itself the most suitable approach to achieve the national targets. In spite of different codifications in play, this policy and the RPs' enthusiasm to create a low-carbon organisation had created a form and zone of freedom by which and in which, RPs were enabled to think, strategise, and act environmentally-friendly.

As a first step, they set their own university-wide target – i.e. 34% carbon reduction compared to 1990 baseline, equivalent to 60% carbon reduction by 2020-21 against to 2005-06 levels.[61] This target was a translation of the governmental one and was the fruit of implementing the Carbon Trust's HECM 5-year programme voluntarily, as discussed in Chapter 4. Through this, the group of RPs responded to the existing dialogue between DES[62] and HEIs via HEFCE, and brought the EU ETS into practice systematically.

They then started to know their site better and in more depth. Regarding transport, they benefited from on-campus gas pump/stations. By keeping record of all university vehicles, they were counting how many litres of diesel, petrol, and electricity were consumed as essential data to calculate their air emissions. As the Figure 4 shows, each driver was logging into the counter by entering a pin, and their re-filling amount was recorded in a computerised system. Therefore, the Transport

[61] These targets covered scope 1 and 2 and the baseline of 2005-06 was applied due to availability of reliable data.
[62] DES stands for Department of Education and Skills.

Manager could retrieve this data to calculate the amount of petrol being consumed during any period of time.

Figure 4: On-campus gas pump/station - Photo credit: author

With this system, they record their fuel purchase (Figure 5) and any time a user re-fills the vehicle by this system (Figure 4), the transaction is automatically recorded with detailed information including vehicle tag number, registration number, the department it belongs to, and relevant cost code (Figure 6). By choosing one of these vehicles, filtered information about it can be retrieved such as user ID, odometer of vehicle, dates of re-filling, and limitations in terms of distance and amount of litres for each re-fuelling (Figure 7). These limitations are amendable in relation with type

of usage (Figure 15)[63]. This information can be filtered by users ID (Figure 16) which shows which department they are based in and what their pin code is. This system allows retrieval of more narrowed data regarding one particular driver (user) by showing dates/time of re-fuelling of which vehicle, how many litres of what type of fuel, from which pump, at what odometer (Figure 17). The Transport Manager then can get the type of information he requires (Figure 18) either regarding one particular vehicle (Figures 19-21) or more detailed historic data (Figure 22).

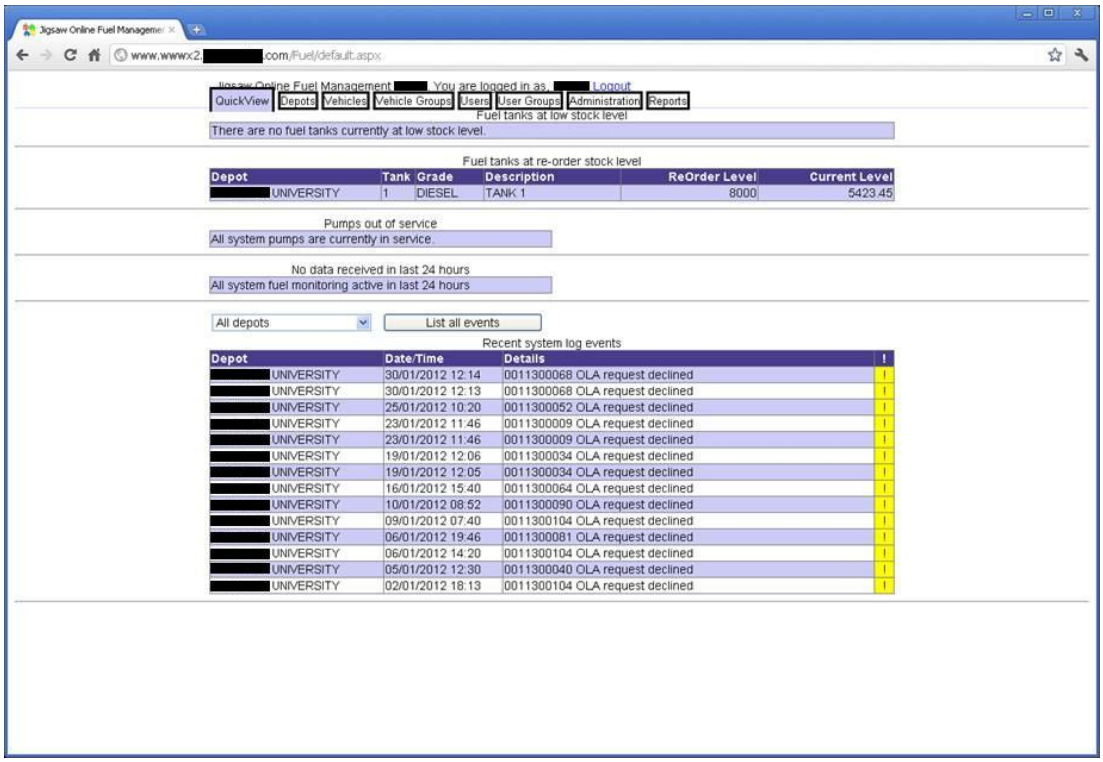


Figure 5: Fuel Management – Source: University X's databank

[63] Figures 15-22 are in Appendix 9.

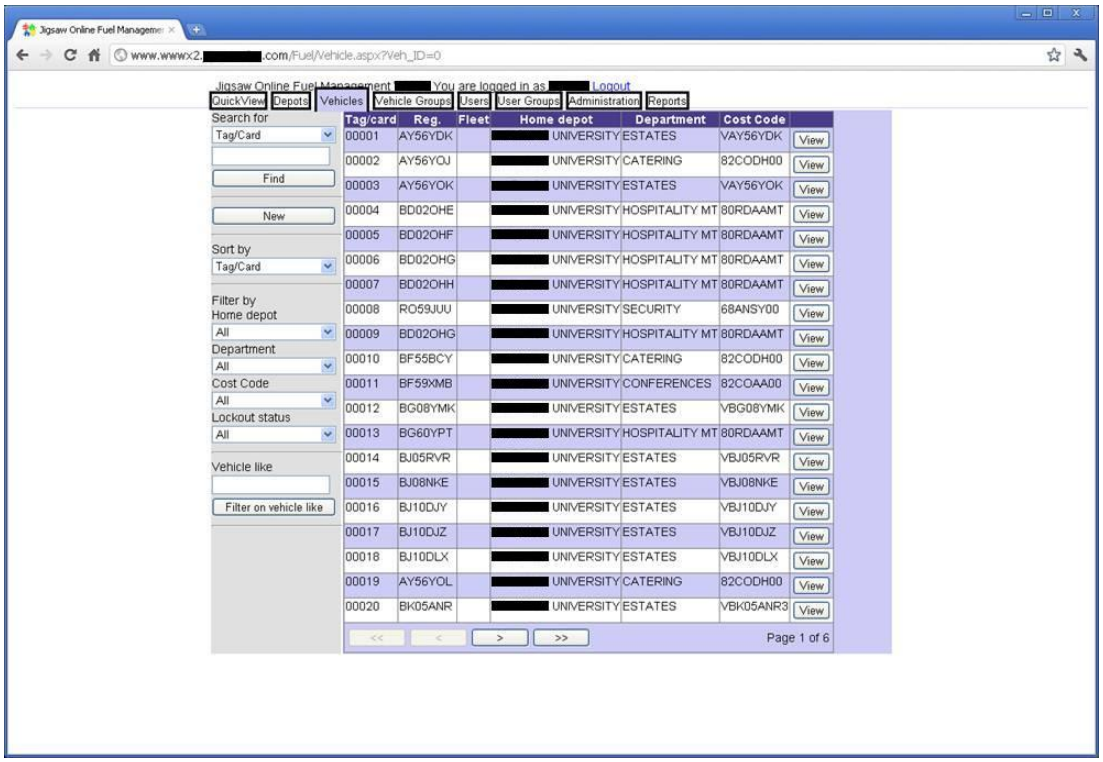


Figure 6: Fuel Management – Source: University X's databank

Figure 7: Fuel Management – Source: University X's databank

Regarding the utilities, they benefited from internal metering by means of 1800 sub-meters across the campus. I followed UTA_1, who was cycling or walking around the campus to read the meters to observe how data was internally generated. I saw utility meters in different size, format, and shape (Figure 8) all of which were coded with a reference number for identification purpose.

Figure 8: Some of internal meters at University X – Photo credit: author

UTA_1 used a device to record the number on meters showing energy consumption. He had access to a table, like an excel file, via his device, including information about the location of meter and period of reading which was on a quarterly basis. After finding the meter on his small spreadsheet and checking the code with the actual reference number stuck to the meter, he entered the digits shown on the meter into the cell on the spreadsheet and then saved it. He repeated this job for every single meter.

Applying such systems had enabled UTA_1 to start analysing raw data and commenting on them on the spot, because the recording device gave him access to previous quarterly data and he could see if there was any unexpected/unusual change in consumption rate. In his office he could then connect the recording device into his computer and update the database. Data appeared in a similar spreadsheet and was ready to use for different purposes. This internal metering had enabled them to know more about environmental problems at different locations across the university and gaining this 'knowledge' mattered to them because:

> "Without monitoring you can't measure it, and if you don't measure it you can't find where you are. So, monitoring is an essential part of energy awareness or energy reduction. Otherwise, you don't know where you are" (UPE).

During a meeting at the Finance Office, I observed a considerable difference between UTA_1 and the Finance Manager. One would expect the Finance Manager to be more expert in interpreting environmental accounting numbers. However, it was quite contrary. UTA_1, with a Physics background and not accounting, was noticing any anomalies by just looking at the table of figures. It seemed to me that it was due to their different perspective in looking at environmental accounting numbers. The Finance Manager was looking at final cost and UTA_1 was looking at the consumption amount insofar as all the data came through him and he knew the buildings. I discovered this when the Finance Manager indicated some sites with high consumption and UTA_1 mentioned this was normal due to the nature of their activities.

He demonstrated how he could easily turn this raw data into charts and visualise the consumption rate quarter by quarter and compare it with previous years' consumption, and showed a familiarity with the patterns of consumption at buildings. The responsibility of data measuring/gathering mattered to him because, as he said:

> "When we start to analyse your evidence, you know, analyse how accurate the thing was and stuff like that, when I think, you know, someone is gathering the data. Without actually having the data there, without analysing the data, how do you move forward? You know, how do you engage with them? Are you actually making progress or not?" (UTA_1).

A cycle of three phases was indicated from his words. Collecting data (which was including (a) the acts of identifying their environmental problems or 'naming' them and (b) 'counting' and 'recording' them) on a regular basis had given the RPs the chance to analyse them by which they could think about their progress so far, as well as suitable strategies in taking action and moving forward. Therefore, implementing naming/counting/recording practices on a regular basis was creating a repetitive three-phase cycle, through which RPs were learning to 'think', 'strategise', 'act' and then 're-think', 're-strategise', and 're-act' green over again. UTA_1, however, believed that instead of wasting time to read meters manually, they could have remote metering which was quicker and could provide the actual consumption far more valuably. They had started getting benefit from some remote-metering equipment, which was updating their database by recording half-hourly data automatically.

Internal metering had empowered RPs initially in two main streams. The first one was making sure that supplier companies had charged them correctly. The second, and more important one, was to have a better understanding about the energy behaviour of each building/department. During one of meter-reading sessions, UTA_1 showed me one of the buildings that was recently refurbished and equipped with new additional sub-meters. They were internal meters (Figure 9) measuring particular consumptions within that specific building, such as the amount of power usage for only lighting the building or just using the lift.

Figure 9: Sub-meters at one building - Photo credit: author

Likewise, applying half-hourly metering was assisting them in calculating the relationship between the energy consumption and other factors such as the number of people in the building and weather by giving an exact profile.

Applying these various systems demonstrated how the RPs were keen to assess and address consumption patterns. More notably, it signalled that they did not limit themselves to gather data for the purpose of EMS or any other annual reports to satisfy governmental requirements. In other words, they did not limit themselves to just being 'active subjects' in terms of compliance to regulatory bodies. They had gone beyond this active subjectivity by becoming 'proactive subjects' in naming, counting, and recording environmental incidents. One day data was measured and recorded simply under the account names of water, electricity, and natural gas for cost-reduction purposes. Although they were recently and actively recorded as (sources of) environmental problems (according to rules) for green aims, they were proactively counted and recorded in more detail by about 1800 internal meters. Measuring and recording data about power used by lifts and lighting system in one particular building was a manifestation of advancement in becoming proactive subjects in 'naming' and 'counting' environmental incidents.

In addition, they were not just metering for metering sake. This proactive subjectivity also manifested in tracking and lessening environmental harms, which resulted in implementing environmental projects across the university. With the creation of proactive subjectivity, the number of environmental projects had increased because, with the help of these collected data, the RPs were able to find the

potential places to create business cases and implement environmental projects which could be beneficial for them in meeting targets. UTA_2 was another RP who was mainly responsible for energy projects. He assessed the energy use in a particular building or an area of campus by considering a technology change in that space such as changing the lighting, the heating, or ventilation systems.

I witnessed that UTA_2 was mainly reliant on two criteria of 'carbon saving' and 'payback period' to justify the project. To evaluate projects by carbon criterion, the following calculation provided by Salix was used:

$$£/tCO_2 \text{ lifetime} = \frac{\text{Project Capital Cost}}{\text{Annual CO2 savings} \times \text{Persistence Factor}}$$

Persistence Factor in the above equation was calculated by the Carbon Trust and provided by Salix to RPs and was updated regularly. The combination of these two criteria was summarised in this way:

a. Maximum 5 year payback period and £100/tCO_2 lifetime basis
b. Maximum 7.5 year payback period and £50/tCO_2 lifetime basis

This equation could be used to calculate the carbon saving for many potential areas, for example within the IT section or replacement of hand dryers (Appendix 8). The significance of these two methods in justifying a proposed project was due to the requirements of Salix, which was a governmental funding body assisting organisations in the public sector to run low-carbon projects. The combination of this method with the carbon-saving factor meant that cost-benefit analysis at appraisal stage included both the financial and environmental aspects, by considering carbon-

saving criteria. It could cost £100,000 to install environmentally friendly equipment A saving 5 tonnes of carbon, or it could be installing equipment B with the same capital cost whilst saving them 4000 tonnes of carbon; UPE used this as an example to explain how project B would be accepted due to the recognised importance of carbon-saving potential in cost-benefit analysis.

UTA_2 used raw data to calculate the energy consumption of that building, but it was generally an engineering calculation. When changing light bulbs, he wanted to replace older ones with new ones of less wattage. He knew the number of lights and typical usage of that building (i.e. 80 hours a week).[64] So, that gave him the idea of energy saving, which was based on straight forward calculations. He then estimated the energy consumption if new lower wattage bulbs were installed. By adding other expenses (such as consultation and labour costs) to this estimation, he then compared these two cases and calculated how many years it would take to recover invested capital from the money saved from using less energy.

At the time of identifying projects, details of the case were going into the spreadsheet. As I witnessed, each case had an overview of the project including individual reference number, the location on the campus, the building, and description of what the project would be, project leaders who would take the project, and the RIBA – the Royal Institute of British Architects. RIBA had a definition of

[64] They were often meter reading. Sometimes it was more difficult because they might have a whole building that was metered but they were doing a project in a certain area. So, their metering data did not tell them exactly how much was consumed in this room. For example, although he had metering for the whole building, he did not have it for just that room. So, he just had to do some estimating. He talked to the building users, he looked at the timetable for the room, he looked at the heating set point for it, and then he could calculate energy consumption and think about the future energy savings from the project.

construction projects, a sort of structure for describing what stages they were on a capital-built project. These stages were labelled A to L.[65] So, everybody in Estates Office used that, whether RPs were changing lights or other teams were building a new hall in science department.

These documents were usually written in spreadsheet format and the headlines of their columns/rows were created within the Estates Office. The carbon element of the projects was a new addition to such documents in recent years because they had additional requirements to the projects reporting's structure, which was mainly meeting the carbon-saving criterion of Salix and using this data for the final annual report which normally included gas and electricity energy saving, cost saving, payback, and tons of CO_2. In brief, modifying the construction of the sheet as a way of re-writing the data was assisting UTA_2 in having a record of their historical and current projects as a way to track and monitor their improvement in cutting their emissions. He also used this to build the Salix compliance, working out whether or not the project would be eligible for this sort of funding.

Internal data-collection had given him the opportunity of analysing the project after completion as well to see (a) the difference between their estimation and actual saving and (b) how much they saved against if they had done nothing. Regarding the importance of these numbers in moving towards becoming a low-impact university, UPE said:

> "The main thing is monitoring the consumption and what we're doing with that information. We could just stick to metering every month. Doing nothing with the information is just meaningless. So,

[65] RIBA defined the meaning of each stage, providing them through Estates guidelines.

> we're gonna make sure we're *proactive* on getting this information, compare it to the historic data. If there is a significant difference, why there is a significant difference and chase that up to try to resolve the issue. So, I think with metering and data, we could probably improve that sort of thing" (emphasis added).

Observing the RPs generating environmental accounting numbers indicated two points. Firstly, they had become knowledgeable about the site and patterns of energy use through accounting numbers, which allowed them to strategise environmental projects, and then to bring them into action. Secondly, through continuity of data generation, they were doing post-completion analysis on accomplished projects, comparing their estimation with actual results. RPs were constituted as proactive subjects who were empowered to 're-think', 're-act', and 're-strategise' on what they had done and the way they had done it. This proactive-ness in green thinking and acting was manifested in implementing practices of naming and counting environmental incidents more in detail (via internal meters and remote meters)[66], through which RPs were re-empowered to re-think, re-act, and re-strategise continuously. This 'willing-ness' also resulted in generating more information regarding transport, for example. They wanted to know transport patterns to and from the university. To do so, they had initiated a survey asking, for example, the post code respondents had departed from, or what mode of transport they were using. To implement this survey, they hired an external agent, who I met with. Apart from the survey, he showed me how they were gaining a profile on transport behaviours via some cameras installed at entrance points, which helped them manage traffic and

[66] This constant recording data included pre-starting and post-completion of projects.

therefore emissions. It seemed to me that the act of counting was being done by camera.

In brief, the RPs were learning to think and act greenly by applying accounting as a system of writing, which had enabled them to record environmental problems and track the progress of environmental-footprint reduction against the baseline they had chosen as the milestone in their performance towards the target they had defined.

Being proactive in thinking and acting green was not limited to the RPs' work time and place, they were also learning (and practicing) to think and act green outside of their career responsibilities.

> "The role I've got just make you think outside the workplace how energy has been used around the home or, you know, in businesses etc. So, how you drive your car! How you could save fuel!" (UPE).

In other words, they were experiencing a change in their way of living. UTA_1 believed that dealing with what they were doing was "a kind of raising awareness" in practice, which had made him to understand "every kilowatt-hour counts" (UTA_1), to 'think' more about how he was using resources in his personal life, and therefore bringing a change in his actions – for example, turning the TV off when nobody was there, thinking about fuel consumption when travelling and alternative modes of transport. He then continued:

> "It's just you end up with being a bit more careful, a bit measuring yourself, and being a kind of 'accountable' to my 'self'".

Through this greater consideration, he becomes a subject able to exercise power over himself. He believed that naming environmental problems (particularly utilities which he was involved in), counting their incidents, and bringing them under control

in order to reduce them had given him 'a way of thinking' which he could apply at many other occasions and therefore 'act' differently in his life. He made an example of himself, driving and thinking about how hard he drove to accelerate and consequently how hard he needed to push the brakes and which was less efficient or whether he could drive very gently. UTA_1 added:

> "So, you start thinking like that. So, of course I've nothing to do with transport …, however, in that kind of thing you end up with how you drive because it then extends certainly. You are analysing things, you're measuring things. You are accountable to your 'self' and thinking about it more. So, you extend it to anything else".

In addition to the above points, he was living about 2 miles away from campus and was using one of university remote-meters[67] to test it. Via this remote metering and monitoring, he showed me his energy profile on his computer. This device had made every single activity visible for him because as soon as he turned the kettle on he could "watch the number just suddenly shoot up [and] you think … you are using energy there. Yeah, you start thinking about it", UTA_1 said. It implied that this radio-based remote metering/monitoring equipment had converted UTA_1's way of living into accounting numbers and charts, by which he could look at them, read them, and think:

> "Yeah, that in the time the days we did lunch and we fired up the electric cooker. And you know, you start to see things like that and you end up analysing on your own what you are doing yourself. So, yes, you take that always. That's why I'm thinking in some ways, you know, if we had that kind of empowerment to everyone else on the campus to get thinking like that, you know, a lot could be saved within this campus and also within their own homes" (UTA_1).

It suggested that UTA_1, through implementing practices of naming, counting, recording/filing, and monitoring environmental impacts, was constituted as a subject

[67] It was a little radio-transmit meter.

proactively analysing his own environmental impacts and exercising his thinking-power over himself to act greener than before. These practices were getting him more interested in a green way of living, through which he was learning to think and act green and greener – an approach he believed that others should learn as well. However, there could be differences between getting him interested or getting someone else interested who did not really care or who did not really know about such numbers.

The creation of a similar green understanding within the RPs' own self was amplified to me when UTA_2 expressed he had noticed that implementing such practices had changed his "perspective" and made him more "responsible". This change in his vision was manifested in his way of living, by having not as many as foreign holidays he used to have and travelling to work only by public transport or bicycle, even though he was aware of his carbon output if he had to drive, he said.

There was much to suggest that the constitution of this proactivity was linked to applying methods of naming, counting, filing, targeting, tracking and monitoring environmental problems because "without targeting, monitoring, measuring, you don't know where you are. You are really blind" (UPE). In other words, this creation was based on applying technology of writing in recording and taking environmental problems into account, by which they were enabled to read them, meditate on them, and act upon them – i.e. technology of writing as a practice of thinking and acting, through which the RPs were learning to think and act more environmentally-friendly.

The RPs were then able to assess themselves in terms of green-ness. UPE, who was an anti-materialistic individual, believed that he was green because of, for instance, trying to buy products with more durability, reducing the heating in the house, and driving his car more conservatively. UPE was reflective on many things. Whilst others were considering electric vehicles as a green product he was thinking of the gas-fired or coal-fired power stations needing to generate the required electricity for those so-called green vehicles. He was described by his colleagues as being a green person since he was cycling to work and being vegetarian, and that meant "less meat, less impact on the planet" (Energy Manager). In contrast to UPE, the Energy Manager drove one hour every day to work and he marked it as non-green behaviour. In spite of this, he scored himself 7 or 8 in scale of 1 to 10. The Environment Manager was recognised as an environmentalist by his colleagues and was good at recycling. I personally saw him couple of times on campus early in the morning when he was cycling to work.

According to the above, it seems the RPs were again exercising power over themselves in evaluating how far their way of living was environmentally-friendly. At the same time, they were capable of assessing their colleagues in terms of green-ness, to some extent. This assessment was mainly based on what the RPs knew about their colleagues at work context and not outside work, which might bias their judgement:

> "Well … you know you we're not green [by] … e.g. flying, flying away. You know, … that's not green, is it? And people in the group I know, we're all reasonably committed [to] green issues but, you know, I saw my mate drive to work and he lived down the road or it's just difficult to, sort of, say if I am greener than they are or

> they're greener than me. In the team, personally I think we probably are the same. You know, simply they drive to the office, I cycle to the office. Some people may not fly abroad for holidays and stay in England. It's a mixture" (UPE).

This strengthened the case that the RPs were not green all in the same way. It also offered that the RP were judging their colleagues, firstly, from their own way of thinking and acting green, and secondly, this judgement was based on their observation during work time.

Whilst being empowered to bring control over man-caused environmental impacts and reduce carbon emissions (both at organisational and individual level) had brought the RPs satisfaction, there were also other factors. UTA_1, who introduced himself as a "gadget person" and liked technology, enjoyed having access to information that was the translation of a big machine working at the boiler house – so he could do analysis on that and was able to think "we should be operating this thing differently", he said. Trying something that could possibly save energy, doing analysis on it, calculations, getting the job on paper and then implemented were quite satisfying, especially if they could make more savings than they originally thought, UPE said. Moreover, another source of satisfaction was the "diversity of job" (UPE) and the chance to explore new technologies, for example, working on the lighting system:

> "There are so many things that we're looking at. The things you'd never thought of that at all. You can certainly, you know, find yourself" (UTA_1).

The significance of controlling and reducing environmental impacts had made it ethically important for the RPs from two aspects. First, these green-accountable

subjects had come to an understanding that they had to also consider other ethical issues simultaneously. They needed everybody on campus to consume energy and water thoughtfully, however, the quality and minimum standard of life must be considered. They were trying to build their buildings as efficiently as possible, but at the end of the day, that building would still need heat, light, power, water, etc. Turning the heating off (or down) and/or encouraging people to switch off as much as possible but not at the expense of people's comfort where they must sit in the cold and dark: "it's doable but it's not comfortable" (UPE). UPE believed therefore that one answer to reducing carbon emission was to apply renewable energy sources and technologies.

These further illustrate a form of cost-benefit analysis, embracing three other ways of cost-benefit thinking in terms of (a) economic: decreasing the input cost but optimally, (b) efficiency: better use of energy throughout the process of running the buildings of campus – so no one will sit in cold and darkness, and (c) effectiveness: achieving the outcome in the form of using the buildings with no (or less) pollution.

Additionally, the RPs were thinking of "flexibility" like "adaptability" as key aspects of sustainable development (UTA_1) in terms of renewable energy (UPE), for instance. This point was considerable because they were relying on gas for their CHP systems[68]. They were all gas engines but gas was pure fossil fuel and if it became unavailable, then they would be stuck, and as such a renewable fuel source would future-proof the CHP system.

[68] CHP stands for Combined Heat and Power, acting as a power generation station producing electricity by burning gas whilst the resulted heat was used to make water hot, too.

These RPs, who had already started walking on the path of environmental ethics, were influencing people outside of University X including family members and friends generally and causing them to "think differently" (UTA_1) and, "ended up [in] changing how my wife does things as well slightly" (UTA_1). General conversations amongst the RPs about their off-duty topics were also affected by what they were doing. For instance, one time they were talking about how to travel to Cambridge and their conversation ended up in considering fuel and carbon emissions of the car as against the train. The intensity of this change amongst the RPs was also demonstrated by UTA_1, via his posts on a university blog, who was trying to encourage others to become environmentally responsible and accountable. He had done so by motivating university citizens to act like 'police' and reporting 'environmental criminalities' to the Estates office. Describing man-caused environmental impacts via the metaphor of criminal act amplified his high ethical degree or commitment in the environmental sphere.

In this part of the investigation, I learnt how these RPs were environmentally ethicized through establishing a mode of relation to their own self which was shaped by ways of naming, counting, and writing technology in the ancient style of '*hupomnēmata*' (e.g. EMS and other ways of keeping record of their historical data) – the modes through which they could have the experience of themselves in terms of identifying, counting, and examining their environmental impacts. Despite the matter that they were individually created or had become green-accountable selves and were influencing people around themselves to become green and greener, it mattered to find out how they were causing such influence over university members and

bringing control over their environmental impacts. The next section and its sub-sections will cover this point.

5.4. Enabling others to become green-accountable selves

The environmental impacts at University X were due in part to the number of people living and working there. However, reducing the impact was the remit of the sustainability team who understood that being green was the responsibility of everyone in creating a greener place/world. This section shows how the ethicised proactive RPs were bringing the staff and student's environmental impacts under control.

5.4.1. 'Objectifying' other selves

To meet the targets the RPs needed to convey their message to different groups of people at University X and influence them to make a real change. They were determined to have this as their "day to day job" (Energy Manager) with the hope that this influence might develop further and affect "other people outside the university" (Energy Manager).

Their communication path was built on the practice of internal-metering. University X was divided into departments and/or buildings, which were called 'cost centres', internally. This university was charged for its utilities consumption by invoice on a monthly basis. This amount was paid off by re-charging it to cost centres on a quarterly-basis. By means of internal meters they had enabled themselves to count the cost centre's usage, allocate their consumption portion, and generate internal

invoices. UTA_1 had responsibility for this. By having all cost centres in his database and metered data stored quarterly there, he was managing "how the numbers were being crunched" (UTA_1) and generating re-charging invoices. Through this action, which was re-writing environmental data from external invoices to internal ones, the RPs were able to charge the university's customers/departments. They were also able to approach cost centres and establish a communication between the Estates Office and other departments. The RPs, by means of internal-metering and cost centres, were able to exercise their power by distributing 'billing data', which was one of the forms of re-written calculated raw environmental data. In brief, departments were objectified for their consumption and were expected to be accountable for that.

However, this was not the case for every group of people at University X, for instance the students. Students just paid a fixed amount of rent, in which utilities was included, receiving no bill or invoice. The contracted fee for accommodation was not the translation of their energy behaviour since students had to pay this fee in advance on a termly basis. Therefore, they were paying the same amount for energy, no one got penalised, and consequently they were not interested in being conservative users, which had made them "more difficult to access" (UTA_1). Thus, the RPs had lost contact with them and they consequently were not aware of their consumption and its relevant impact, due to this lack of a communication path. There was a huge barrier there. It was not just about having the data available, because I witnessed that the RPs had the data and they could easily translate it.

The only access to residents of university accommodation was indirect contact via a form of competition or the 'Go Green Week' awareness campaign – exactly the same as one I had personally experienced in 2009-10 when I was living at one of the residential blocks of another UK university, doing my Masters degree. Campus residents were automatically entered into an energy-saving competition, through which the winning hall would be the one that had saved the most. Therefore, students living at university halls were monitored for their energy consumption by RPs and it was done by kWh data stored in their database. Halls of residency were ranked (Appendix 10) by creating charts based on the accounting number representing their energy performance. Environmental accounting numbers were not communicated with students as it was done at cost centres and they were only used to determine the winning hall. Through this, students were objectified for their consumption by being monitored, tracked, and ranked. The only motivation for students to contribute to the green performance of their building was to win the small prize at the end of it. Yet, not everybody was really participating diligently because prizes were not always attractive for everyone, equally. Moreover, while I was attending all the activities of 'Go Green Week' at University X, I witnessed that some numerical Environmental data provided by RPs was shared with Student Union to use on their posters.

I also observed the same poor communication between RPs and members of staff. Saving energy was not compulsory and it appeared to me a difficult job for RPs because "we can't make people to do it", UTA_2 said. The RPs' challenge in contacting staff was the point that "those people have other responsibilities [and] in their job description there is nothing that says that part of your job would be to save

water in your building. It doesn't exist at the moment", UTA_2 added. However, by the use of internal metering, they had been able to "put pressure on people to say 'your building is the worst in campus and you need to think about it'. Some people would say 'right, we'll take that challenge, we'll do something'. Other people would say 'no'" (UTA_2). It was the only way they could influence them without financial motivation. The lack of bills by consumption amount had caused them (e.g. academic departments) to be unaware of their consumption, discouraging them to look at, for instance, how they could change their research practices to save energy and water. Their payment fluctuated for using the space. For example, one building might have various different uses within. One laboratory had no water, no sinks at all. The laboratory next door had hundreds and they both were charged the same. So, it reduced or removed their motivation to save. It implied existence of neither accounting communication based on a true translation of their utility usage, nor financial motivation consequently, to lead them towards thinking and acting differently, insofar as UTA_2 believed they conversely needed to bombard people with calculated environmental information to overcome difficulties in bringing a change at those places.

The worst case was the time that the temperature of the majority of university buildings was controlled centrally by setting it on a certain degree. In spite of using that building, they were not practically asked to take responsibility of their building's environmental performance. Therefore, monitoring energy usage in those areas could not be very fruitful because heating was automatically running even if the room was vacant for few hours. In other words, people did not have any power to change their

own environment. It was especially difficult when people were disempowered to take action. By not giving people the opportunity of acting differently, there was no reason for them to 'think' about their potential vital role in changing their behaviour.

New construction at the university equalled higher energy and water consumption, higher pollution taxes and increasing the capacity to accommodate more people on campus, which in turn meant growth in transport, whilst their legal limitation in emitting GHG was getting more narrowed than before. To solve that, the university's staff and students were objectified by being provided with a limited number of car park spaces with a longer distance to their building. Under these circumstances, they were objectified by two types of calculated figures: number of car park spaces and distance of car park to their building.

In approaching different departments within university, the RPs also had a general challenge. Departments of, for example, physics and science, were very energy intensive. Research was part of the reason that they existed. They were getting funding because they were doing research. RPs understood those buildings in terms of lighting, heating, and ventilation but they did not always understand an experiment at such buildings and consequently it was more difficult for them to say 'could you turn that down or turn it off?' because already the answer was no as it ran through the night.

5.4.2. 'Subjectifying' other selves

As it was covered in the above section, the RPs could approach students and staff at University X differently. On the one side, they apportioned the responsibility of the

university's utility consumption over departments by metering, monitoring, and billing, through which those departments were objectified by the RPs. This led to having a communication path between the RPs and departments. On the opposite side, environmental performance in some parts of University X was not measured, monitored, and tracked linked to actual behaviour/activity of students and staff. This had caused a lack of communication and a huge barrier between the RPs and those students and staff.

There was a difference between these two sides. The existence of communication paths had let accounting travel further across the university and permeate into the departments, through which environmental accounting numbers were transferred from the Estates office to departments. It was done by re-writing incoming invoices in the form of internal bills. However, on the opposite side, no way was paved for accounting to continue its journey and therefore no environmental accounting numbers were shared there. This section will then look at what accounting did in those areas where it travelled in comparison with other places it could not go forward, in order to investigate how accounting could be part of the solution and beneficial in bringing environmental impacts under control.

Although this communication path had provided a connection between departments and the Estates office, it was financial numbers that were already traveling through and not environmental numbers. For example, conference centres would pay for the electricity, heat, and everything they had used, and this was communicated. In the past, they were just told the amount to be paid at the end of re-charging period. They

did not actually know how many kWh they had used. The problem with that was the change of rates over the years. It meant they could not really grasp whether they were actually making any difference. For instance, they might go ahead and invest in new cooking equipment in their restaurant. That meant eventuating in possible savings by applying more efficient equipment, but at the same time, could end up with the rates going up. Hence, they were getting the bill for the same amount of money or more. UTA_1 had then modified it to help environmental numbers use this path to travel, too.

Based on this modification, some of the departments' staff got access to raw kWh data. So, they could evaluate their usage in relation with the occupancy and other key factors which were unique and effective in their section. For example, usage might go up and down at conference centres as one of busiest places within University X and they could interpret that in relation with their business, whether they had a quiet week or not. Therefore, by this little change, the Estates Office was receiving reactions and responses from those places that were provided with raw accounting data – e.g. raising questions like "Why are we using this? Can you come and help our staff" (UTA_1). These reactions showed they might not necessarily be interested in the actual tonnes of carbon, but they were seen by the RPs as certainly interested in raw numbers that reflected their actual consumption, because they could find suspicious consumptions in their department. In brief, it was a new practice through which "they are empowered to do that and more motivated" (UTA_1).

Generally the data had always been there because RPs had always generated and updated their record of data which listed the buildings, and then the kWh usage, and

the cost. It was just that it had never been communicated in the wider ways like this, because when the RPs did their internal billing, this document (including only financial information) was distributed to finance rather than to the operations staff, according to UTA_1.

At the time of this old approach, RPs were quite often getting phone calls from the operations staff saying: "Can you tell me exactly how much we used? How was that split up?" UTA_1 stated. Those calls were rooted in noticing that a £10,000 utilities bill had disappeared from their cost code as it had been pulled out by their finance people, without them knowing the utilities break-down.

This change in distributing the bill was only because people started to ask such questions and such communication lapses. The RPs also added departments' equivalent carbon footprint at the end of those sheets even though they were not sure yet they would get seen or noticed.

In addition to this new system of writing and distributing environmental accounting data, some departments[69] were enabled to have access to remote metering systems and could directly get at the raw numbers – i.e. half-hourly data. Conference centres had been looking at those numbers and as a result, the RPs did not have as many requests for e.g. 'how much we used' and instead were getting contacted about how they could reduce their usage in different areas of their own section, UTA_1 explained.

It implied, based on this approach, that departments were analysing the data for the RPs because when 1800 meter readings were coming to RPs, they were not looking

[69] For example, the conference centres, the art centre, and maths department.

at them in depth, if any at all. However, those people were interested in their areas; they were motivated because they were paying the bill and their business affected their bottom line. This system of writing and having access to half-hourly raw data had paved the way for environmental numbers (and accounting) to travel from the Estates Office to departments, make contact with right people there, and make them aware of environmental behaviour at their department. The knowledge they were gaining via environmental accounting statements was enabling them to analyse their energy pattern, for instance, in conjunction with other key elements in their area, think about it, and take action through a strategised way. By this system of writing, in brief,

> "They [i.e. departments' people] get interested, they are investigating themselves, and they give us [i.e. RPs] the call and say: 'This is what I've noticed. What can we do?' And that's certainly far more productive than, you know, phoning us and saying £10,000 has taken out. What's it for? So, they're certainly more interesting [i.e. raw environmental accounting numbers] to them … It encourages behaviour change from a fundamental level. So, certainly it's more valuable" (UTA_1).

It suggested that providing the data to those who were interested was certainly much more powerful and far more valuable than RPs sitting at the Estates Office trying to analyse data and thinking what they should do with it whilst always blind to what was going on in any particular building every day and every hour. For, although by looking at buildings'/departments' utilities profiles RPs were getting to know the nature of activities at different buildings of university and how energy intensive they were, at the end of the day, departmental managers knew their buildings much better and could make sense of environmental numbers. RPs had the kWh data and the usage data for the Art Centre but not the occupancy and the number of events, for

instance. However, departmental managers did. Likewise the Conference Centres, managers at Art Centre knew how much business they had through the door and they could relate it themselves:

> "We're [i.e. RPs] pretty out there to those departments [to carry out proposed environmental projects]. Now, they've actually started to think differently, a little bit differently, yeah. It's not the wider community. It is just operations manager but yeah they've started to think differently because now they are considering the energy consumption and the financial impact of that. So, we're getting there." (UTA_1).

A similar approach at research sections was indicating the same result. RPs knew how much energy was used to run an energy-intensive big piece of equipment in a laboratory to generate a particular chemical material to be used in a research project. However, they did not have any idea as to how much of the actual product had been produced. Therefore, RPs were unable to carry out cost-benefit analysis based on calculating fuel consumption or incurred cost for every litre material that they had produced and then deciding whether to out-source it or not. Hence, by disseminating environmental statements to them, they could consider doing this calculation and cost-benefit analysis, which was "just doing ours", UTA_1 said. However, it was the case if they were in charge of paying their own expenses.

Those departmental managers were first objectified by being brought under scrutiny and being monitored. They were recognised as individuals in charge of their portion of contributing to University X's environmental footprints through receiving internal bills. However, by getting that data out to, for example, the conference centres, they were changed in terms of how they were operating their buildings because they became active subjects paying a reasonable amount of time looking at their energy

and doing analysis on it. RPs also found it "a lot easier to engage with them on conservation projects" (UTA_2). By adding environmental numbers to internal bills and sending this modified environmental statement to these individuals, they were empowered to analyse how water and energy were being used at their building on daily and even half-hourly basis and then think how they could take action in making it greener, pro-actively – a job that was never in their remit to look at.

Although there might still be some individuals not believing in global warming or understanding the importance of the environmental aspect of energy, they had perceived energy as a 'valuable commodity' with its price going up continually – the increased price resulted from environmental taxes and inaccessibility of non-renewable energy sources as they were going to finish. And this in practice was changing the way people were looking at value of energy and how they needed to consume it to conserve as much as possible, because at the end of the day "if you don't believe in global warming, you want to reduce your kWh anyway because it saves you money" (UPE). Hence, the start of this change in consumption behaviour was directly resulting in less GHG emissions and other pollutants. This empowerment at departments was not created by the exercise of RPs' power over them, but it was rather the power of accounting carried by environmental statement that had made this change at departments.

Reflecting more on this issue in relation with my own life, I thought it could be like, for example, if I was provided with the information for my local Tesco's, did that really help me in becoming greener or environmentally aware? On the contrary, if I was provided with the information for my own house and I would see on the

weekend I used a lot more electricity, at least I would know in my head that was because we had guests around and we made some meals. Hence, that was far more empowering to the actual end user because they would get to be more tuned in. This modification, which was UTA_1's initiative brought into action in 2009-10, had facilitated direct and reciprocal communication between RPs and departments, through which they were empowered as proactive subjects who had started thinking/acting/strategising green. It meant they were converted from 'cost centres' to 'responsibility centres' in practice.

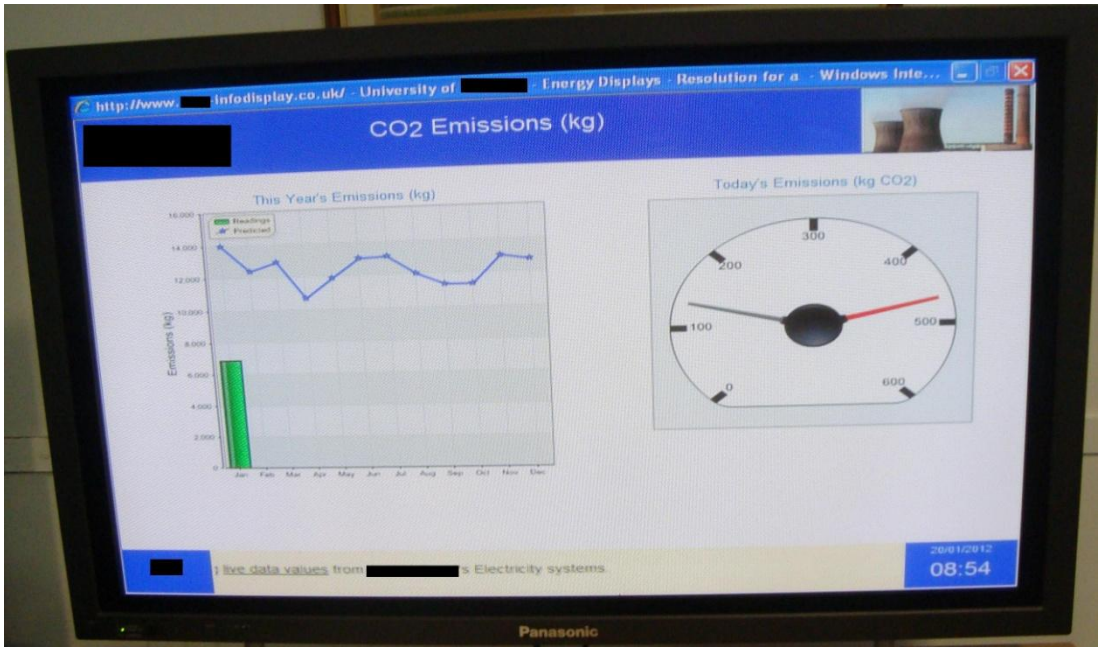


Figure 10: CO_2 live data – Photo credit: author

Distribution of environmental statements was not limited to the operational managers of cost centres. By applying existing technology, the RPs covered a wider population to have access to parts of environmental data linked to the building they were working at or had gone to as a visitor. It was done by display screens (Figures 10 and 11)[70] at various buildings which I had seen for the first time at reception of the Estates Office. By having university-wide information and applying these display screens at reception of some buildings, the RPs were trying to show those calculated numbers to everyone. I observed that staff and visitors were having a quick curious glance at it when walking into the building or having their lunch break there. It could increase the RPs' hope that these people would know their building better from the

[70] To show this live data in better quality, Figure 11 is a screenshot from online link that I was accessed to by RPs.

aspect of energy-consumption. One would expect them to think more about how all staff could enhance the energy efficiency at their building by using energy more thoughtfully. However, it was just an expectation and the result was not clear because environmental numbers were shared through a ‘one way’ communication.

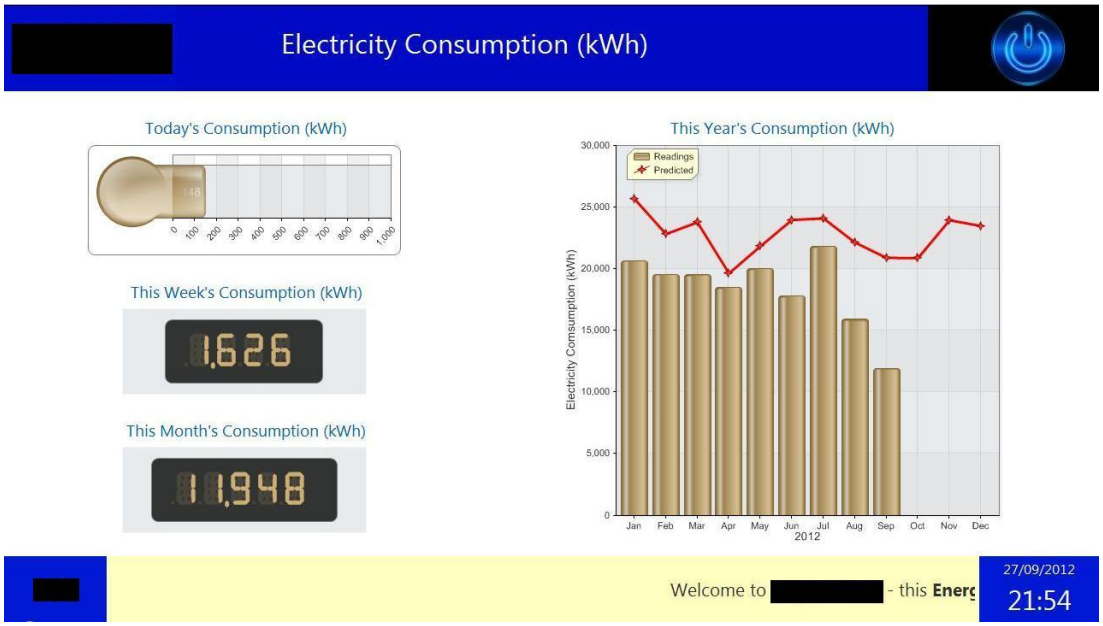


Figure 11: Electricity live data – Source: staff network

RPs as writers of environmental data were trying to approach people out there as their readers via these live environmental accounting statements. However, there was no motivation there to develop it further and build a dialogue between RPs and others through a reciprocal contact. I witnessed a similar situation when environmental statements were distributed via DEC at buildings as shown earlier in this chapter. Even if those certificates were playing a positive role in environmental

awareness, the result was unknown to the RPs as there was no encouragement to convert it into a reciprocal dialogue. The worst case was in residential halls where students were not receiving environmental statements. Their payment was not linked to their consumption and they were not affected personally, and consequently were not mindful of their usage.

To conclude, I have attempted in the above section to show how and how far environmental accounting was travelling across the university. It was making positive changes in enhancing environmental awareness (and consequently performance) at places where it could have access. At the same time, there were places where it was stopped by barriers and where it could in the short term at least have no effect.

However, in the next section, I seek to open up the possibility of how what accounting was doing might have wider effects, in 'places blocked by barriers' (so to speak) to an extent where accounting and accounting practices, particularly as or if put into play by others occupying the kind of 'subject position' developed by RPs, could potentially be envisaged as enabling wider 'zones of influence'. This might be an incremental process where a wider range of large and small managerially-run organisations, and levels and forms of governmental bodies could be more populated by such subjects engaging in such practices. It might be a more general shift in 'ways of thinking and acting' so that these kinds of solutions would be promoted from 'the top' down as well as building from 'the bottom up'. The objective is to open up

some possible ways in which society or societies might move towards a low-carbon world.

5.5. Towards a low-carbon world?

This section and its sub-sections would then complete unfolding the implementation of environmental accounting at University X, which was partially described so far in this chapter. Therefore, the rest of accounting's journey will be covered here, showing 'how' and 'to where' it travelled and 'what' it did in its journey to reduce and manage man-made environmental problems and leading University X as part of a bigger society towards a low-carbon world.

5.5.1. Naming-and-Counting practices

The usage of electricity and gas had always been taken into account at University X. However, writing those accounts were linked to cost and financial reasons. These two types of energy were recently identified as sources of environmental problems (under scope 1 and 2 categorisation) and were legally required to be reported annually. To do so, the way of writing and documenting existing accounts was modified to cover the environmental aspect of these energies. This modification was manifested in the creation of a new account called the 'carbon account'.

The way it worked was based on 'conversion factors' provided by DEFRA[71]. These factors were representing carbon intensity of different environmental problems, by which dissimilar types of environmental impacts were translated into carbon-

[71] Environmental Reporting Guidelines for Company Reporting on Greenhouse Gas Emissions, available at http://archive.defra.gov.uk/environment/business/reporting/pdf/envrpgas-annexes.pdf (Accessed on 08/06/2014).

equivalent units and then brought under one account. Therefore, every litre of petrol used for university vehicles was not merely counted in terms of financial costs, but it was also employed to calculate environmental impacts of fleet vehicles owned by the university. For example, according to Table 1 showing conversion factors[72], the carbon equivalent of 500 litres of petrol burnt within two weeks was calculated in this way:

$$500 \text{ (litre)} \times 2.31 \text{ (CO2 factor)} = 1155 \text{ KgCO2}$$

Table 1: Sample of Carbon Conversion Factors - Source: University X's documents

CO_{2e} Conversion Factors		
Energy Type:	**CO_{2e} Factor**	**Units**
Coal	0.30	kWh
Electricity	0.43	kWh
Gas	0.19	kWh
LPG[73]	0.214	kWh
Oil	0.26	kWh
Transport Fuel:		
Diesel	2.68	litre
LPG	1.51	litre
Petrol	2.31	litre

I also earlier showed that carbon unit was also used in justifying proposed projects to Salix. In addition to the criterion of the payback period, RPs had to apply a carbon-counting element as well. The criterion of carbon unit in evaluating projects was constant pollution-reduction. For, this way of naming and counting had enabled RPs to calculate and show University X's potential and actual carbon saving. Moreover, naming and counting environmental problems under the carbon account had

[72] These factors were based on guideline published in 2005, which was updated periodically.
[73] LPG stands for Liquefied Petroleum Gas.

extended the application of accounting practices in the sphere of environmental issues and had therefore made environmental accounting distinct from conventional financial/management accounting:

> "The difference between management accountancy and energy accountancy is only the carbon columns which have to be integrated into it" (UTA_2).

Reflecting on the extension of accounting practices on environmental issues and an emergence of environmental accounting through the creation of a carbon account raised these questions for me: What was the advantage of the carbon account? What was accounting doing by naming and counting under carbon unit that the units of kWh, litre, and tonne were unable to do? First, it was defining an environmental aspect, side, face and/or meaning on items that were counted for financial reasons. Litres of petrol were no longer counted in order to merely audit the cost of fleet fuel at University X. These generated numbers (i.e. litres of petrol) were being applied to calculate the volume of emitted pollution based on the consumed amount of petrol. In brief, numbers (i.e. litres of petrol) were producing other numbers (i.e. kg of carbon) and it was through this 'reproduction of numbers' and 'naming/counting' under carbon unit that the environmental identity of items such as petrol was getting introduced. Second, although reproduced numbers were still numbers, they were more revealing compared to those numbers which had initially been produced based on financial accounting. The (conventional) numbers were always available, but they were "quite abstract" (UTA_1) insofar as RPs could not relate them to environmental dimension because "not everyone knows what kWh really is… [and] they can't relate it to reality" (UTA_1) when it was, for example, reported that building X used

20,000 kWh a month. What did that really mean? Therefore, carbon unit was acting as a ‘reference point’ through which, the ‘reproduced numbers’ under carbon account were unfolding ‘conventional numbers’, interpreting them, and revealing the truth being always borne (or hidden) inside them. And this truth disclosure was done by the very practices of accounting, which not only were naming, counting and writing practices, but also were practices of re-naming, re-counting, and re-writing.

The reproduced numbers, which were carrying the carbon translation of conventional numbers, had brought fragmented accounts (e.g. diesel, petrol, oil, electricity, gas, etc.) together under the carbon account. However, it had not brought the ultimate satisfaction in disclosing and/or interpreting the environmental truth of such fragmented accounts. There were indications there suggesting that repeating this cycle of naming/counting/writing could bring further satisfaction in interpreting (or truth-revealing of) realities hidden in reproduced numbers again by new accounting numbers. For example, not everyone could comprehend the meaning of the statement ‘Building X emitted 10 tonnes of carbon last month’. What did that really mean? Observing and talking with different people looking at energy screens in receptions of some buildings at University X highlighted the point that not everyone understood the meaning of live environmental statements on such screens. For instance, the receptionist at one of those buildings in response to my question on what she was thinking about the live materials shown there expressed that she did not know what it was exactly about. She said that she just turned it on every day in the morning when coming to work and turned it off in the evening when she wanted to go home and the only thing she knew about it was that it was showing some numbers about energy

consumption and CO_2. This poor comprehension had become a sort of obstacle on accounting's journey:

> "We haven't really got the data out of the wider public and it is partly because they don't necessarily know what it means. So, there is a difficulty there in translating that" (UTA_1).

The balance of carbon accounts for any item and within a specific time period could be translated into new numbers. It meant those environmental numbers (carbon numbers) could be re-named into a new title, re-counted, and re-written in the form of new statements through which the environmental truth could be revealed in a more understandable way. For example, building X was emitting 10 tonnes of carbon a month which was equivalent to driving 70,000 miles, UTA_1 said. By re-naming carbon accounts into other accounts (e.g. carbon into mileage account), re-counting its balance into new numbers (e.g. 10 tonnes of carbon into 70,000 miles driving), and re-writing them in the form of new statement would be a possible way to reveal the environmental truth of any item to wider population of society, through which they could understand e.g. 10 tonnes of carbon emission was caused by energy consumption that could cover driving 70,000 miles and that was actually quite a large amount of energy.

> "You see the equivalent of so many flights to New York, and people start to relate and at the moment we don't have that translation. Many we can calculate but at the moment not, we haven't actually put that out there" (UTA_1).

Feeling the need to continue and repeat the cycle of naming/counting/writing was echoed by the point that "people are non-technical and can't necessarily relate" (UTA_1). Generally the wider population of the university was not engaged in energy or engineering (and not doing any module relevant to ecological concepts and/or

units of measurement). People could not relate that turning off their computer could save energy which was "actually equivalent to something" (UTA_1). It could be stated that turning your computer off each night was equivalent of e.g. 400 kWh a year, but to say, for example, it is equivalent to using a television for 4 hours is more understandable. Hence, the wider population could relate the numbers to the environmental truth they were holding via translating numbers to numbers by the very practices of accounting – i.e. naming/counting/writing. Likewise, it could also be said 'one thousand kilograms of carbon' instead of 'a tonne of carbon' because 'one' would still sound small compared to 'one thousand'. UTA_1 explained:

> "There's still a lot you can do with the counts to raising awareness to the general non-technical kind of public" (UTA_1).

In conclusion, there was much to suggest that accounting was capable of disclosing many environmental truths, however, it had not been applied in order to do so. Accounting was translating its own-produced numbers into new numbers through creation of new accounts and could do that endlessly through which it could be truth-revealing, have access to more groups of people, and raise awareness. On the other hand, it was true that environmental truths were written in different forms of statements and distributed across the University X. The RPs, who were composing these environmental statements, were preparing and writing environmental reports which were expected to be read by different readers. To see more in detail that what accounting was doing through this writing process, the investigation was then focused on the final stage of implementing environmental accounting practices which was centred on preparing and publishing environmental reports, covered in the following part.

5.5.2. A reciprocal relationship

The last phase of accounting implementation referred to the time when environmental statements were distributed and shared with others outside of the RPs community. These statements were composed based on raw data, re-written in dissimilar formats, distributed to different groups of people, and circulated at various scopes. However, they could generally be categorised in three main groups at University X.

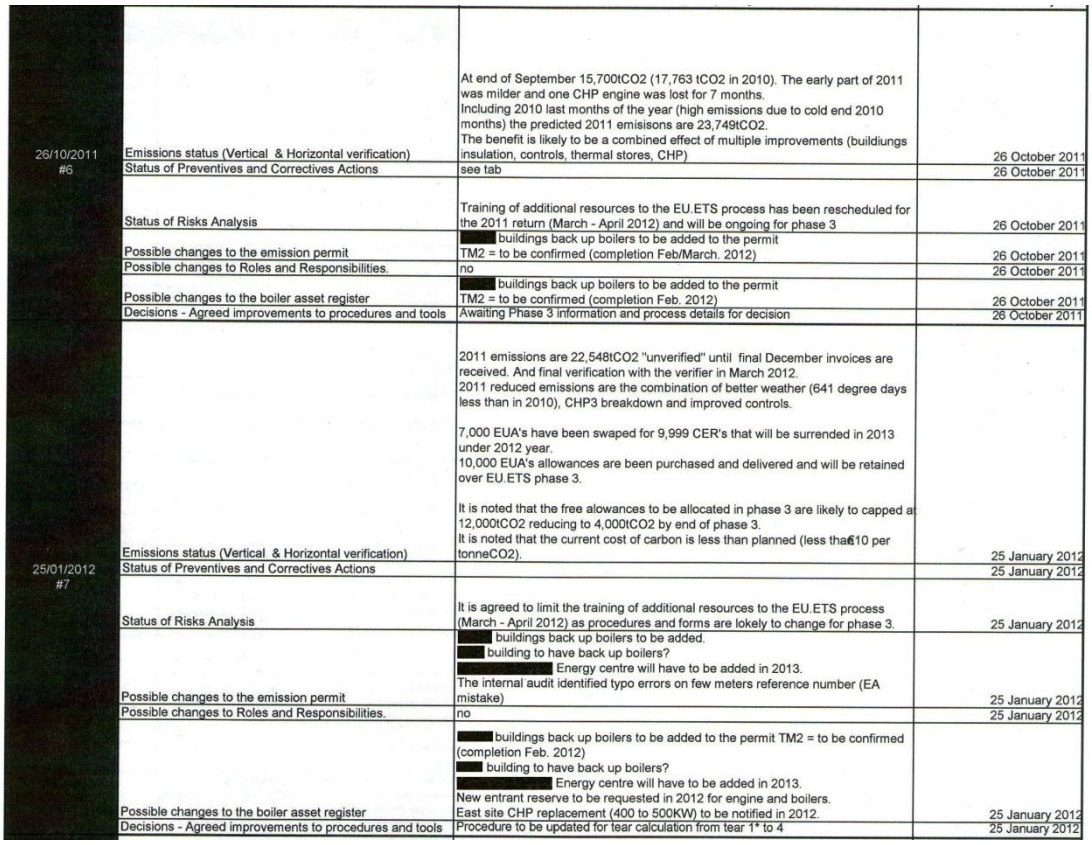
The first one was for auditing purposes such as reporting to Salix: (a) presenting the business-case proposal and justifying its eligibility of being granted supporting funds, before starting the project and (b) providing information[74] about the accomplished environmental project, at the end of the project. Likewise, the other statement was for EU ETS reporting to show their carbon-reduction performance on an annual basis. This type of reporting and statement-writing was like a one-way communication between writers of documents (i.e. RPs) and readers of them (i.e. Salix and external auditors of EU ETS and Environment Agency) as the funding body wanted to know how the money was spent and the regulatory body required to know whether there was any environmental improvement at University X. The fixed format of required items in reporting systems of authority bodies amplified this point. Thereby, these writings and information provision initially appeared 'compliance-oriented' practices. Put differently, with this practice in motion, it

[74] The process of submitting this information for auditing purposes could be in two ways, as they had experienced. The auditor from Salix could visit them, wanting to look at what they had done. They had done so once before. Or alternatively, they could do a desk audit by emailing UTA_2 and asking for invoices proving they bought the equipment and invoices for the labour, showing they had installed the equipment.

seemed that the readers of these environmental statements were only governmental and authority bodies. Yet, this conclusion was superficial. Such schemes seemed a legal requirement; however, "it's there for a guide…the rule of thumb!" UPE said. With a deeper look into what I observed throughout the implementation of accounting practices, there was much there suggesting that the real readers of those statements were the very RPs. Whilst these statements were written to meet legal requirements and satisfy authority bodies, the RPs were practically engaged in constant writing (of their data) and keeping their project file updated regularly in order to show how they run the work. Therefore, they were always going back to historical data, tracking their own performance, and monitoring their own progress.

By the means of this constant writing and recording data, they were able to read their own statements in two different approaches, horizontally and vertically. Horizontally, they were reading their own collected data (meter reading) in relation with supplier invoices on a monthly basis to check consistencies. This reading practice resulted in re-writing practice – i.e. re-writing their initial statements in a new form of internal bill statement. Storing historical data constantly had also enabled the RPs to read their environmental records vertically, by which they could compare months and years, especially in their quarterly review meetings to detect anomalies (Figure 12). Thus, the compliance aspect of naming/counting/reporting practices had caused RPs to be practically and actively engaged with practices of writing and reading their own environmental accounting statements, think about them in relation with historical performance and compared with their defined base year, and strategise for future actions to meet the target. In this way, they were

reviewing themselves through the practices of writing and reading their own environmental statements.



26/10/2011 #6	Emissions status (Vertical & Horizontal verification)	At end of September 15,700tCO2 (17,763 tCO2 in 2010). The early part of 2011 was milder and one CHP engine was lost for 7 months. Including 2010 last months of the year (high emissions due to cold end 2010 months) the predicted 2011 emisisons are 23,749tCO2. The benefit is likely to be a combined effect of multiple improvements (buildiungs insulation, controls, thermal stores, CHP)	26 October 2011
	Status of Preventives and Correctives Actions	see tab	26 October 2011
	Status of Risks Analysis	Training of additional resources to the EU.ETS process has been rescheduled for the 2011 return (March - April 2012) and will be ongoing for phase 3	26 October 2011
	Possible changes to the emission permit	[redacted] buildings back up boilers to be added to the permit TM2 = to be confirmed (completion Feb/March. 2012)	26 October 2011
	Possible changes to Roles and Responsibilities.	no	26 October 2011
	Possible changes to the boiler asset register	[redacted] buildings back up boilers to be added to the permit TM2 = to be confirmed (completion Feb. 2012)	26 October 2011
	Decisions - Agreed improvements to procedures and tools	Awaiting Phase 3 information and process details for decision	26 October 2011
25/01/2012 #7	Emissions status (Vertical & Horizontal verification)	2011 emissions are 22,548tCO2 "unverified" until final December invoices are received. And final verification with the verifier in March 2012. 2011 reduced emissions are the combination of better weather (641 degree days less than in 2010), CHP3 breakdown and improved controls. 7,000 EUA's have been swaped for 9,999 CER's that will be surrended in 2013 under 2012 year. 10,000 EUA's allowances are been purchased and delivered and will be retained over EU.ETS phase 3. It is noted that the free alowances to be allocated in phase 3 are likely to capped at 12,000tCO2 reducing to 4,000tCO2 by end of phase 3. It is noted that the current cost of carbon is less than planned (less than €10 per tonneCO2).	25 January 2012
	Status of Preventives and Correctives Actions		25 January 2012
	Status of Risks Analysis	It is agreed to limit the training of additional resources to the EU.ETS process (March - April 2012) as procedures and forms are lokely to change for phase 3.	25 January 2012
	Possible changes to the emission permit	[redacted] buildings back up boilers to be added. [redacted] building to have back up boilers? [redacted] Energy centre will have to be added in 2013. The internal audit identified typo errors on few meters reference number (EA mistake)	25 January 2012
	Possible changes to Roles and Responsibilities.	no	25 January 2012
	Possible changes to the boiler asset register	[redacted] buildings back up boilers to be added to the permit TM2 = to be confirmed (completion Feb. 2012) [redacted] building to have back up boilers? [redacted] Energy centre will have to be added in 2013. New entrant reserve to be requested in 2012 for engine and boilers. East site CHP replacement (400 to 500KW) to be notified in 2012.	25 January 2012
	Decisions - Agreed improvements to procedures and tools	Procedure to be updated for tear calculation from tear 1* to 4	25 January 2012

Figure 12: Sample of quarterly meeting agendas including horizontal/vertical reading of environmental statements

The second category of writing and distributing environmental statements was to inform departments about their environmental responsibility portion. As it was explained before, RPs were writing and sending environmental statements in the form of internal bills (resulted from their own practices of writing/reading) to the right people at departments such as facilities manager and operations manager etc. In practice, this modified written communication was also presenting the department's

'way of being' at university in terms of their utilities consumption. This distribution of environmental statements had established a sort of two-way communication and correspondence between the Estates Office and departments. These individuals, as readers of these statements, were reacting to what they had read and their reaction was manifested through asking questions from the RPs on how they could improve their environmental performance. Writing and sending environmental statements (i.e. internal bills) to departments and receiving questions on how to improve environmental performance in those areas had established a reciprocal relation between the RPs and departmental managers. In this case, the right individuals at departments were readers of such statements who through this practice of reading were contacting the RPs and objectifying them through asking and requiring them to provide solutions to increase their performance. In response, the RPs were again in the position of producing new environmental statements in terms of offering solutions or proposing environmental projects. Thus, an environmental dialogue was established between RPs and departments via writing and reading practices.

Thirdly, on the contrary to the two above categories, there was "no comprehensive media to inform every staff or every student" (Energy Manager) about University X's environmental performance. Approaching some groups of individuals through the practice of writing was challenging for RPs in areas such as residential halls explained earlier in this chapter. Likewise, it was other groups of staff and students in campus who were not in charge of their consumption portion. The circumstances in such areas had blocked the way of distributing environmental reports directly to such people. I witnessed that the heating system in academic buildings,

administrative offices, and lecture rooms was set to a fixed degree and centrally was controlled even though many of such spaces were not used all the time. By having such a system in place, no opportunity was given to these individuals to use heat in their office consciously and thoughtfully. Therefore, no environmental statement was sent to them and consequently no environmental conversation was established between the RPs and them. In brief, accounting had a limited chance to travel to these areas through distribution of environmental statements and it was limited to live screens, DEC, competitions, campaigns, and updating carbon management plan annually accessible to public via dedicated university webpage.[75]

The RP's decision on updating the carbon management plan year on year was aimed to "show our performance to date" (UTA_2), and this publicly available document was fed by data from EMS and the projects database. Although writing this document was meant to provide overall information about University X's environmental plan and development, people out of RPs' community were not the only readers of this document. More importantly, RPs were getting benefit from the very practice of writing this report or, to be more exact, implementing simultaneous practices of writing and reading this annual report, insofar as it was "for our [i.e. RPs] information as well", UTA_2 said. For, observing the utilities team at the time of updating their annual carbon management plan, they were deciding which projects were successful, which ones did not work out and did not save as much carbon as they had thought and therefore that was giving them an opportunity to have a holistic view over their last year performance compared to their targets and base year.

[75] Relatively, such places within University X were showing poor environmental performance, slow improvement, and were challenging for RPs to start communicating with them environmentally.

Hence, the RPs believed that this practice of writing and preparing this annual report was "almost best practice for internal process" (UTA_2).

Since students were one of those groups who were not effectively accessible to be informed directly about their own performance, they were then contacted through competitions and the 'Go Green Week' campaign. During the events of this one-week-programme I observed that environmental accounting numbers were used in different ways (e.g. movies, charts, screens, lectures, group discussions) to inform students about the consequences of man-induced environmental impacts. I witnessed that it resulted in the establishment of an environmental dialogue between RPs (as well as campaign organisers) and students, through which students raised questions on how they could save energy at home. RPs were happy to hear such questions from staff and students because "they probably bring back that sort of mentality to work with them as well" (UPE). Such reactions were completely new in contrast with 13-14 years ago when UPE joined University X, as he said:

> "A lot of people weren't bothered or weren't concerned – probably is a better word – weren't concerned about energy because it was cheaper, same as fuel for the car (petrol, diesel). It was a lot cheaper because energy has gone up. People that used to, sort of, laugh at green people, all, sort of, now try to speak to them to say how could we save money because our energy bills are massive. People have got domestic bills …. So, what we have started thinking [is to] practice saving energy after all. The other change I've noticed is that people are asking more questions now on how they could save but that's because they are thinking financially. It's hurting them in the pocket" (UPE).

Increases in energy price which included environmental taxes was affecting people in that they were becoming more interested in learning ways of conserving energy. Distribution of environmental facts (i.e. environmental taxes and other expenses

resulting from environmental standards which were causing higher price for energy) in the form of accounting numbers and figures presented in energy bills was changing people's way of thinking and acting regarding energy. Therefore, the RPs as writers of CSR and environmental reports were receiving calls and contacts from previously-non-green people asking for guidance. This made a reciprocal relationship between writers of these reports and their readers. For example, via the competitions, new ideas of simple energy-saving methods were shared by students on a dedicated Facebook page, not only with their peers but also with their operating managers, competition organisers, and the RPs at Estates Office. Taking and posting photos[76] on that Facebook page not only was a new and modern way of responding to RPs but also was a new way of composing environmental statement. In whatever form of communication it was, it was a reciprocal relationship.

Comparing the above ways of data communication suggested that distribution of environmental information mattered to the RPs because it had established an environmental conversation across the university which had brought positive changes in raising awareness and changing people's, as well as their (i.e. RPs) own, way of thinking, acting, and living green. From UPE's viewpoint, it was not just the matter of having figures and numbers, but circulating and disclosing these data amongst different groups of people because "I'm accountable while I know the information" (UPE). This rationale was highlighting that RPs were trying to apportion the Estates Office's environmental accountability to other groups of people at University X by disclosing and distributing environmental information across the

[76] These photos varied including e.g. putting the lid on pan, turning down the heat and wearing warmer cloths, setting washing machine on 30 degree, turning off the lights and many other things.

university, especially through targeted and designated routes explained earlier about departmental bills.

Reflecting on this issue in my own personal life, I noticed that I was aware of much outside the university consuming a lot of energy such as big cars on the road. It reminded me of the time of purchasing our family car and my husband and I were provided with a table of numbers including mileage per gallon (of petrol or diesel) and their CO_2 emissions. We could relate the financial consequences of these items on our annual road tax and insurance at the time of obtaining quotes – directing us to think 'the greener the car is, the cheaper it is'. It also suggested that the figures were out there and somebody had obviously measured and monitored them – the numbers which could not be discarded from our minds.

In the HE sector, circulating environmental accounting statements was providing beneficial results as well. As stated earlier, all universities were submitting their environmental data to HESA via EMS. Each year the RPs reported a huge range of Estates statistics. All universities had to do it. RPs sent off their statistics to HESA and then when they had compiled them, they were available to RPs at every university. Through the distribution of universities' data to the whole sector, RPs were enabled to see their position amongst other universities in terms of many things such as water and energy consumption and CO_2 emissions. RPs had a log-in to the website where they could download EMS-based data of universities.

Through this, the RPs had understood that University X was using quite a lot of water and caused them to think "what are we doing with water conservation? Why is

it not prioritised? What can we do?" (UTA_2). By reading their own data compared with other universities, University X had decided that they wanted to have a water action plan similar to their carbon management plan. At the time of doing this research project they had not yet created it but that document was intended to be shared with, and circulated to some of the main stakeholders of the university, with the aim that departments would sign up and reduce their water consumption. Hence, as they had done with carbon management, they wanted to do with water as well.

Above all, it was crucial to understand the importance of carbon account in writing and distributing environmental statements. As earlier mentioned, the carbon emission linked to the amount of consumed energy at each department was calculated and recently added to internal bills on the very end of the bill as a figure. Carbon unit was used as a reference point to translate environmental impact[77] not only at University X but also at national level used in the CCA 2008. The application of carbon unit in writing and preparing environmental reports highlighted the point of how the RPs used the language to communicate with others across the university to disclose University X's environmental truth, and it consequently raised the question of what 'carbon' was doing that other units such as kWh, miles, number of flights, or equivalent of driving a car had not.

Reviewing University X's documents and observing the way RPs were preparing data to be published in annual reports revealed that this carbon account was capable of illustrating the overall impact of University X with a single number. The principal identified and recognised environmental impacts of the university were under scope

[77] Impacts defined under categories of scope 1 and 2.

1 and 2 including different types of energy which were consumed in dissimilar ways. All of these impacts across the university were stated within one number of the carbon account. Moreover, this carbon account was giving them better decision-making powers in creating projects as it was giving them a more realistic view on the environmental aspect of what they did or wanted to do. Based on their experience, they could assess a new technology which a lot of universities were using. By going over the numbers through their spreadsheets and through their own carbon spreadsheet they could decide that it was not worth it in their organisational context.

There was a concern about the mechanism of data distribution across the university, though. How RPs would get them out to the people and what it also related to was "another thing" (UTA_1) as it could potentially cause negative effects along with all the benefits it could have. Stating that, for example, 'Utilities team have changed the equipment for air-conditioning and now we are saving equivalent of 10 flights to New York every day' (or something like that) could potentially cause some to think "the Estates Office got these under control and I don't need to bother … I don't need to be worry about my own personal energy consumption because the Estates Office is thinking about that instead" (UTA_1). Hence, distributing environmental statements at a large scale could potentially cause risk unless it was carefully thought about their focus. Instead of highlighting energy saving due to equipment replacement, reporting could be more focused on energy saving via turning computers off at night – i.e. stressing on those activities which staff and students could and were involved with. Also, instead of sending mass emails which would probably be ignored, asking managers to communicate with their own teams was decided to be more effective.

Despite this concern, the practice of writing environmental reports and making them publicly available would stimulate staff and student to think "the Estates Office is doing all this work; maybe I should be doing my bit" (UTA_1). Surfing University X's dedicated environmental webpage and reviewing their CSR-oriented report also echoed this, as there were clear calls asking for everyone on campus to take responsibility for their own environmental actions. Observing the way in which RPs were identifying, naming, counting, and reporting on the university's environmental problems suggested to me that whilst these RPs had the technical and scientific background, they were engaged with practices which were implicitly linked to social sciences. For, it mattered to them to understand "if you tell people in the certain way, what they're doing, how are they gonna respond" (UTA_1).

5.6. Chapter summary

Studying accounting and observing how it is contributing to sustainable development, have directed the investigation to the backstage of University X's environmental report – the place where accounting is in operation and mobilised across the university. Reflecting on what I have observed, heard, read, and learnt about accounting has resulted in the following findings:

- The RPs working as members of the sustainability team at University X came from different academic backgrounds and a range of diverse professional expertises including Electrical Engineering, Mechanical Engineering, Project Engineering, Quality Management, Physics, Ecology, Civil and Environmental Engineering, and Thermodynamics. This multiplicity of

proficiencies ensured that a diverse range of knowledge and skills could *potentially* be brought to bear to generate 'solutions' for environmental problems. Building on the findings of the previous chapter, this chapter signals that what one might call a 'trans-disciplinary network' of knowledges which could (and then did) become involved in articulating a 'green/accounting' discourse.

- The context in University X was one where what would become named as 'environmental management' had been restricted largely to auditing energy consumption, which was undertaken as an 'add-on' function of a wider job role. From 2001 when the UK Climate Change Levy came into force, there was a first change in function with focus on energy monitoring, and a job hire was made of one who would become a key member of the subsequent Sustainability Team. The role was arguably, in retrospect, done initially in an 'amateur-ish' way but it would become an independent position with its own title. The emergence of a discourse, eventually of 'environmental management', accompanied the development of the Team, now with its own distinctive trans-disciplinary know-how, and its own webpage on the university website.
- Expansion followed as an increasing range of environmental standards came into play, including extended sets of national and EU level governmental regulations and laws. The specification of guidelines for safeguarding and *managing* the environment promoted forms of conduct where RPs could develop forms of 'subjectivity' and occupy particular expert 'subject

positions' aligning commitments (variously achieved) to green ways of living with accounting-based ways of doing safeguarding and managing work. For example, UTA_2, who joined University X's sustainability team in 2010, observed that "there wasn't anything defined when I arrived….and things were rarely prescribed". This implies (and again amplifies bullet 5 of the previous chapter) that these RPs have learnt a kind of 'normal' way of thinking and acting based in part on a collection of rules and guidelines proposing how to apply accounting-based practices to name, count, and write environmental incidents and events, but also on their 'interpretation' of such rules.

- At the knowledge level, their shared trans-disciplinary range of expertise (in addition to skills mentioned in the previous chapter[78]) has enabled them, as thinking and acting subjects, to search for and negotiate various 'knowledge mixes' in the generation of solutions for environmental issues: this in itself constitutes the development of a shared 'sense of direction' across the team and within each RP, even though individuals will vary in how (and how far) they experience this. One implication is a sense that global warming and climate change will be manageable only if diverse forms of proficiency (including but not limited to their own disciplinary specialisations) is applied to cut man-made environmental harm at a steady pace. This is arguably a distinct way in which RPs as experts are linked at a level of 'understanding' beyond their disciplines. This also indicates that how a new kind of

[78] For example governmental and non-governmental bodies, politicians, legislators, consultants, researchers, national agencies, non-profit organisations.

knowledge frame or *savoir* may be getting articulated as a more general form of 'trans-disciplinary' collaboration conducted by professionals who seek to fight climate change through implementing forms of practices altering how we think and act in the direction of enabling 'sustainable development'.

- One impact of accounting-based practices can be seen as emerging out of the interplay between (a) prescriptions and regulations and accounting-based targets, and (b) interpretations by RPs of how to generate optimal environmental outcomes within the 'legal limits' for targets set. This has led towards forms of problem-solving even in this trans-disciplinary field being understood as 'having' to be framed in 'cost-benefit' terms. Different forms and levels of cost-benefit analysis (narrower or broader as seen to be appropriate as analysed using RP expertise) could be seen as coming into play. The research investigation in University X indicates that multiform and 'rich' ways of cost-benefit thinking are going on. RPs' can articulate this as being framed in terms of 'environmental conservation versus human needs'. That framing enables an increasing range of issues to be problematised – and then solved in terms of meeting cost or time targets using carbon unit and financial metrics – in ways that revolve around the cost-benefit way of thinking, plus accounting-based measures defined in one or more of the 3E terms (i.e. Economy, Efficiency, and Effectiveness). Cost-benefit ways of thinking (grounded in the carbon 'value' constructs) get linked to a 3E's way of thinking to generate 'solutions', within the boundaries of 'illegalities', to sustainable development issues. This implies that there is a new overall way

of cost-benefit thinking – a way of thinking which considers the nature (or the human impacts on the nature) as a crucial and significant factor in processes of decision-making and problem-solving.

- In the articulation of what can be seen as a new kind of discourse and practice of 'environmental management via accounting', RPs learn how to become new forms of trans-disciplinary experts who in a sense 'pass through' accounting circuits constantly: this enables them to live out a form of ethical conduct as disciplinary experts operating within certain necessary rules of conduct but also being able to develop a 'relation to self' which can draw in and upon their shared commitment (albeit at varying levels) to green ways of life. They become skilled at operating within an 'environmental (or green) truth game' which has the characteristics identified above, where accounting expertise is integral to differentiating what counts as 'true' and 'false' in generating environmental 'truths' and 'solutions'. Reciprocally, learning how to operate within the environmental game of true and false has opened up a general new cost-benefit way of thinking for them, which can become part of their experience in two complementary ways: within the 'organisation' and at the level of 'personal life' as explained in the following bullet point.
- Perhaps in part because this game has to be played within constraints of national and international law and regulation (i.e. environmental guidelines and standards), RPs have in playing (and playing in) this 'truth game' found themselves establishing a reciprocal mode of relation with others that works

as a power relation. Just as law and regulation act on their actions (particularly in regard to avoiding illegality), so they, as experts deploying accounting-based cost-benefit analyses, find ways in which they may act on the actions of others (e.g. the readers of their reports and those that such readers manage and act upon). Thus, they may start circulating similar form of cost-benefit thinking in order to spread and maintain environmental normalities within and across the university, and indeed beyond it as others in other settings develop similar moves in this and other similar truth games. One may note that such tactics are not necessarily new. Forms of naming, counting, and writing in shaping ways of caring for the self and others can be seen in ancient techniques of 'writing the self' and developing good conduct. From ancient '*hupomnēmata*' to forms of '*correspondence*' with teachers or pastors down to exchanges appearing in formats of emails, social networking, etc, there are long-lived practices here. Implementing the acts of naming, counting, and writing with other formats such as EMS in their engagement with environmental problems and solutions have potentially enabled RPs to establish their own versions of a mode of relation with the 'self' and to develop specific forms of 'self-formation' via the practices of naming, counting, and writing, particularly insofar as they engage in a 'relation to the self' of reflection and self-correction. The repeated acts of writing and analysing environmental incidents and issues in accounting-based ways may be enabling RPs to become 'ethical subjects' forming themselves in new ways on this basis. Alternatively these tactics can enable them to find spaces

for expressing certain forms or levels of freedom or independence, with respect, for instance, to proposing project choices or shaping project implementations, in ways that can have 'purchase' on the ultimate decisions, because of how they are able to play the 'truth game' understanding and drawing on key rules and practices.

- Finally, it may even be the case that RPs (as well as some from other departments who become active subjects playing the 'truth game' in a similar way in their own department) have started discovering this accounting-based approach to environmental thinking as integral to all levels of everyday practice: whether they are meter-reading, updating their EMS, analysing energy consumption within one building or across the whole University X, carrying out environmental projects, reporting to authority bodies, or preparing their annual reports for publication. The 'knowledge journey' that has arguably been taking place at University X, as traced here, has aspects of older ways of thinking and ways that come from well beyond the organisation and their personal lives, even while they may penetrate how the RPs think and act now. Versions of the awareness that Rachel Carson raised live on, even as the RPs discover for themselves new ways of thinking and acting green out of their own prior experience.

Chapter 6: Discussion

6. Introduction

In this chapter, I review the archival and fieldwork material I have presented and discuss how and how far it is now possible to grasp and comprehend the issue of what accounting does in the backstage of CSR-oriented reports, and on that basis to show how it can and does contribute to sustainable environmental development. I shall suggest that the way it can be seen to operate behind the scenes may help promote new ways of seeing how accounting operates wherever and whenever it is put to work to generate environmental solutions. Insofar as this is the case, it may be suggested that this form of bottom-up approach may contribute to constructing the positive forms of critical social and environmental accounting that Spence et al. (2010) have argued for.

The chapter therefore reviews the research questions undertaken and some of the key issues that have emerged as the investigation has progressed. It then presents a summary of key findings. Finally three possible emergent roles for accounting as key means of promoting a 'green agenda' are discussed.

6.1. From 'Research Question' to 'Form of Enquiry'

As discussed in Chapter 2, while the increase in the number of companies and organisations drawing on accounting practices to address their environmental problems is dramatic, and has led to them generating and publishing regular CSR-oriented reports, it is not clear that such initiatives have either had the hoped-for effects or resulted in genuine environmental accountability. In the light of emergent critiques of mainstream social and environmental accounting like that of Spence et

al. (2010), it has become apparent that there is intellectual space for proposing a range of new critical approaches to addressing the problematic of environmental accounting. It is in this context that this dissertation has proposed drawing on emergent revisionist readings of Foucault (e.g. Hoskin, 2015; Paltrinieri, 2012) which recommend that the focus in Foucauldian work should move from the analysis of practices as such to a consideration of how statements (in this case accounting statements) and practices interplay. Such re-readings make this recommendation on the basis that this is the kind of work that Foucault himself consistently undertook, while also stating that this was his approach (see Chapter 2).

This study has therefore followed this recommendation and attempted to pursue Foucault's methodological commitment to undertaking analyses that are both 'archaeological' (and concerned with the analysis of statements) and 'genealogical' (tracing how practices, particularly those shaping thinking, knowing and acting, contribute at any given time to the making and circulation of certain sets of statements and certain systematic silences). In this way it has sought, in Foucault's words, to study the 'relations between the subject and truth' beginning from a "systematic scepticism toward all anthropological universals" (Florence, 2000, p.461). Given that analytic frame, this study has attempted to make sense, in its 'bottom-up' way, beginning from the level of particular statements and practices understood in this Foucault-derived manner, of the general rise or dissemination of environmental accounting discourse and practices in recent decades, as a significant feature of a present that is to be read as having some distinctive historical features, seemingly unanticipated one hundred or even fifty years ago. Hence the question

formulated here was: ‘How far is environmental accounting adopted and how is its implementation made to happen?’ – a question which, it was then argued drawing on Foucault’s conceptualising of ‘experience’, could also be articulated as ‘How is the experience of implementing environmental accounting and disclosure practices made to happen?’. This could then be operationalised in the specific context of the work of RPs as: ‘How and how far are accountants and other RPs implementing environmental accounting in practice and generating environmental information?’

Investigating the answers to the above questions by focusing on the construct ‘experience’ was initially seen as one possible way of providing further insights into the roles and functioning of accounting in environmental spheres (and perhaps other areas where, under contemporary corporate capitalism, the environment tends to appear as a ‘neglected aspect’). In the event, it proved particularly fruitful within the micro-context that the bottom-up approach led me towards, through opening up the image that the interplay of making statements and engaging in practices entailed both a ‘front-stage’ and a ‘back-stage’. The possibility that I then followed was that the ‘front-stage’ production of accounting-based environmental ‘truth statements’, and of proposals for environmental improvement grounded in those statements, was systematically dependent on the ways of thinking and acting that first manifested themselves ‘back-stage’ where the process of report preparation began.

Focussing on and analysing the ways in which accounting was called upon in the backstage settings where RPs initiated the process of producing any given environmental report arguably also helps contribute to develop routes towards a

more effectively critical social and environmental accounting theorising and practice. For instance at the practical level, this form of analysis may help to uncover ways in which RPs and the reports they produce may more effectively enrol their readers or recipients as active 'participants' in environmental development activities. Insofar as such changes do transpire, then things that currently remain more or less as silences may surface as discursive regularities. Finally, at the level where theory and practice may intersect, the extent to which any such practical outcomes materialise may impact on the level of visibility and plausibility that bottom-up forms of analysis may achieve going forward. One particular possibility I would like to suggest is that this might perhaps provide a new visibility for the metaphor of the world as a stage, as observed by Shakespeare in *As You Like It*, and as theorised for instance by Erving Goffman in *The Presentation of Self in Everyday Life* (1959). Here the environmental report rather than the presentation of self becomes perceivable, as mentioned in Chapter 2, as a performance on stage presenting the story of an organisation's environmental development. Likewise as a 'performance' which is visible for audiences in the auditorium of 'the text' (in printed or electronic form); the CSR is accessible for interested readers. However, whatever the reaction of audience or readership to staged or textual 'performance' (whether one of interest, concern, perhaps pleasure, or even indifference), a central feature of the performance, as focussed upon here, is what goes on 'backstage', which must in any given performance remain invisible to audiences, but can be of equal or greater interest, and arguably significance. For frequently what has happened behind the curtains and hidden from the eyes of the audience/readership is what has enabled,

shaped or constructed the performance – whether 'masterpiece' or flop. Moreover, beyond any given performance, the activity backstage continues as the day-to-day living out of 'experience', which has its own effects. One message that arguably comes out from this research is that, even where individual 'performances' may have negligible impact, the cumulative effect of so much back-stage activity taking place via accounting is far from negligible, taken as a whole.

The aim of using this metaphorical example is to say that the backstage of CSR may arguably now be construed or interpreted as a form of 'everyday life' mystery which needs to be confronted and to a degree unravelled if we are to establish how the employment of accounting for environmental purposes in organisations ends up in the production of environmental accounting statements which cumulatively have an impact greater than that of any individual one. There may be a theoretical gain to be made by recognising this backstage as integral to the 'performance' which creates (or is expected to create) green satisfaction (at whatever level this turns out to be) not only for the report writers (who are perhaps the actor-equivalents here), but also for their readers (the audience equivalents). It may become more widely appreciated as an integral and necessary stage to generating 'performances' and beyond them to enabling ways of thinking and acting to shift in ways which may perhaps result in our moving one or more steps closer to an eco-friendly society.

Looking beyond the potential benefits that the publication of such reports can bring to organisations (e.g. constructing or maintaining a green identity for them), the question here is rather focused on what accounting is doing (through its

implementation) behind the scenes to make such little steps happen towards a potentially greener world with real environmental improvement. Therefore, focusing on the writers of environmental reports has been seen here as particularly important, rather than focusing primarily on their audiences or readers. [At the same time, it is recognised that shadowing readers would have, at this stage, posed huge logistical and interpretive challenges if pursued as the means of investigating (a) what accounting is doing behind the scenes and (b) how it is doing that to contribute to sustainable development.]

So the focus here has been on report writers/preparers and on enabling a particularly 'close' engagement with the production and circulation of what one might describe as 'green/accounting discursive regularities' since it is the group of writers who make up the RPs who take part in implementing accounting practices and then write CSR and other types of environmental accounting reports. [In this respect they might be seen as 'authors' of the performances viewed by the audience/readership rather than 'actors' in those performances as I have just suggested.]

[On the other hand, bearing in mind Foucault's warning against making too much of the 'author function' and seeing the 'author' as unitary 'constitutive subject', it could also be appropriate to see them as 'actors': not least because the texts they 'author' have to follow strict rules and conventions concerning what gets said and how it is presented, if they are to qualify as 'legitimate' contributions to the 'truth games' in question here.]

In this respect, this study, in following and focusing on those subjects categorised as RPs, has hopefully succeeded in not focussing on them as 'constitutive subjects', but has rather established how a search for truth concerning 'accounting for environmental problems' gets undertaken and articulated, through the research activity of following and observing RPs who had access to, and were working within, the CSR 'backstage', as their means to producing their 'green/accounting' texts and discourse.

Therefore following RPs, as writers of CSR texts, has hopefully succeeded as a research approach providing a systematic means of undertaking Foucault's focus upon seeking to provide fresh understandings of the relations between the two poles of 'subjectivity' and 'truth' (Foucault, 2000a, p.281), with particular respect to the field where accounting and accounting practices interplay with forms of environmental intervention. From the side of the 'subjectivity pole', these RPs have been understood as subjects engaging in and with accounting as active sense-makers, and so, in Foucauldian terminology, as 'truth-tellers' or 'subjects of truth-telling activity' (Foucault, 1983, p.74). From the side of the 'truth pole', the focus has been on searching after the range of forms that particular statements take in contributing to the production of 'veridictions' (in the Foucauldian sense) through the deployment of accounting practices and statements in the promotion and implementation of environmental objectives.

With all that in view, I have followed and looked at environmental accounting statements from the following five perspectives proposed by Foucault: their

‘production’, ‘regulation’, ‘distribution’, ‘circulation’, and ‘operation’ (Foucault, 1980, p.133). In addition to that, I have also investigated the ‘experience’ of implementing environmental accounting and disclosure practices from the three dimensions proposed by Foucault: (i) ‘a domain of knowledge’, (ii) ‘a collection or ensemble of rules’ and (iii) a ‘mode of relation of the individual to self’ (Foucault, 2000c, p.200).

In this way I have sought to undertake a kind of ‘micro-level’ form of research in line with Foucault’s bottom-up approach, operating at a local level of study, through which the relation between (a) the ‘subjectivity’ (that is composing environmental accounting statements) and (b) the ‘truth’ (which is distributed throughout the production, regulation, distribution, circulation, and operation procedures of such statements) can be investigated when the ‘experience’ of environmental accounting implementation is made to happen. As such, this approach has sought, procedurally, to make visible, as far as possible, the ways of thinking that RPs engage in as they go about their everyday activity as implementers of accounting practices and writers of environmental accounting statements). Proceeding in this way has hopefully avoided any claims to be ‘seeing inside’ given individuals; instead it seeks to trace, through a focus on the production in writing of accounting statements, how individuals who come with specific and distinct forms and levels of expertise and ‘green commitment’, then become constituted as, and recognise themselves as capable, legitimate, and skilful actors in the domains of (a) implementing accounting practices in environmental spheres and then (b) writing and composing environmental accounting statements.

Moreover, it is hopefully the case that this has successfully enabled me to observe what accounting is doing backstage in the construction of CSR reports to 'work on nature's behalf' and/or to lessen or manage the occurrence of man-made environmental damage.

6.2. Summary of findings

My study of accounting's implementation in the work and writing of RPs has made the following findings. First I found that RPs (as local practitioners of environmental accounting discourse) drew upon a range of discursive and non-discursive practices, both at the time of their initial recruitment and thereafter, not least because they entered into the RP form of activity with significantly different prior forms of personal experience and training, and were then often engaged in dealing with diverse forms of environmental problem, requiring different specific types of expertise and different patterns of strategic response.

Thus at first sight their personal histories and professional expertise seemed "much too different" (Foucault, 1972, p.37), and the range of projects in which they were involved seemed to cover dissimilar forms of environmental harm.[79] Thus they appeared to be involved in "functions that were much too heterogeneous to be linked together" (ibid.), even though they were grouped as members of one sustainability team.

[79] For example, consumption of electricity (both generated on site and purchased), water, heat, petrol, gas gasoline, generation of waste (including landfill, incinerated, and recycled), and transportation impacts.

However, what they said and did 'as experience' throughout the processes of taking all these environmental issues into account had a historical dimension of similarity, in that all had come to this work having developed contemporary forms of disciplinary expertise, thus sharing in a mode of *savoir* which goes back perhaps more than two centuries.[80] Of particular relevance here was the shared discovery of a 'way of knowing' (which was not uniform but had certain regularities to it) centred on recognising that using expertise to reduce our human impacts on nature could result in slowing down global warming, less rapid climate change, and a better quality of life.

Thus, at the level of personal history, one of the RPs had become interested in contributing to society through following an environmental or green career path as he had learned the concept of waste and over-consumption prevention from his parents' own commitment to resource conservation. More generally, RPs could be seen to have a personal, if distinct, historical trajectory prior to their becoming engaged in their organisational roles in sustainability teams, committed to generating environmental solutions through accounting.

Beyond the personal history differences, it was also possible to discern how their ways of thinking and acting 'made sense' within a wider, now global and insistent, discourse concerning the dangers we as humans pose to our world, which is widely

[80] Foucault, as noted in chapter 2, observes in 'Truth and Juridical Forms' (2000) that, if 'inquiry' is the form of knowledge developed in medieval western Europe, then examination is the new form of knowledge of the 18th and 19th centuries, and key to the constitution of the human sciences. Hoskin in *The Educational Genesis of Disciplinarity* (1993) traces how the introduction of the new practice of written, graded examination in 18th century European elite educational settings leads in Germany to the new discipline of philology and in France to an active-learning experiment-based approach first to doing science and then human science.

understood as stretching back at least to the early 1960s when Rachel Carson, among others, publicly raised the risk and dangers of man-made environmental impacts on humans and all other living creatures, and the planet we jointly inhabit.

A second finding was how diverse and 'trans-disciplinary' were the knowledges and skills which RPs brought to the team work and strategies that they developed in University X. At the same time, the deployment of these knowledges tended to be channelled into certain ways that either implicated or privileged accounting discourse and practices. For the typical problems with which they were confronted tended to be framed in terms of 'costs' versus 'benefits' along two simultaneous axes, (a) maintaining the financial health or survivability of the Organisation and (b) hitting targets for reduction of carbon emissions; and so solutions were discovered as having to be sought in terms of *optimising* outcomes along both axes simultaneously. Thus there was a form of 'normalising' of ways of thinking and acting towards an accounting framework, even as different forms (and sets) of disciplinary expertise were discovered by the teams to be particularly useful in different specific problem situations. This normalising towards accounting discourse and practices was in certain respects already underway in University X. Thus ways of thinking and acting were normalised in interrelated ways: from outside the teams to inside as the organisational world and its discursive regularities circulated also within the everyday world of the teams and team members, but increasingly in a reverse direction, from within their world and the cost/benefit grounded initiatives they promoted, ran and monitored to the organisational world beyond. So previously recognised cost-units of, for example, natural gas became named and counted

additionally in terms of the amount of particular greenhouse gases emitted, as listed in the Kyoto Protocol. Then, in a bottom-up process, these newly named and counted emissions became measured uniformly as 'carbon unit' emissions: whereupon they could be monitored as entities in 'carbon accounts', and accountability regimes could be set up where consequences followed from failure (or success) in meeting carbon account targets.

In consequence RPs learned to operate within and with this set of normalised and accounting-based ways to bring their past histories and forms of expertise to bear on such key issues as how to differentiate what was an environmental problem from what was not, how to define the limits of appropriate interventions on problems defined as environmental, and how to operationalise a programme of interventions along optimal cost-benefit lines. Furthermore, they and their programmes then were disseminated to others who in turn learned, in their own organisational spheres, to operate with accounting-based practices and discourses as new 'norms' of thinking and acting.

In other words, RPs made the scoping, envisaging and implementing of environmental initiatives happen through first internalising and then disseminating such norms, which *per se* were structured and presented to RPs by the accounting-based acts of naming and counting. They then had success as these initiatives circulated, insofar as they succeeded in making the initiatives feasible (in terms of practical implementation) and plausible (in terms of 'enrolling' those charged with implementing them into the accounting-based norms of their initiatives).

Furthermore, RPs succeeded in initiatives insofar as they learned to operate with appropriate principles and practices for differentiating the 'true' and the 'false' in the accounting-grounded ways of thinking and acting within their organisations and constituting appropriate environmental or green 'truth games' in conformity with these wider norms. This true and false game, as a form of 'normality', simultaneously brought RPs into contact with and submitted their statements to the expert forms of scrutiny of advisors and consultants and then of authority bodies and legislators – a process which contributed to the 'objectivation' dimension in the constitution of RPs as expert subjects, engaged in a green game of true and false, in which all are undergoing an interplay of subjectivation and objectivation on the path towards being constituted as 'good', 'skilful', and 'legitimate' subjects in the field of accounting for environmental sustainability. In a Foucauldian sense, they internalised through this interplay 'codes of conduct' along with engaging in a reflective 'relation to the self', all of which procedures are implicated in living out the 'experience' of becoming a subject accepted as proficient in (a) a 'green' truth game and (b) generating environmental accounting statements, solutions, and truth claims within the parameters of what is and is not seen as currently sayable within that truth game.

In such ways, these RPs are formed or constituted as subjects who could be called (or considered) as 'Environmental Accountants'. By this is meant that, while as knowledge experts they are applying their own professional skills (in Physics, Thermodynamics, Engineering, or Environment Science etc.), they also come to articulate (and become seen as articulating) veridical forms of accounting discourse,

in the process of promoting accounting-based environmental initiatives and solutions. This becomes the case even though none of them has any professional or academic background experience in accountancy or accounting. Their expertise is no longer seen as comprising accounting as an 'add-on', nor increasingly do they act as if that was the case.

One way in which this perception arguably came to 'have purchase' with other knowledge experts is through the way in which they deployed orally and in writing the discourse and terminology of cost-benefit thinking, with its focus on the 3 E's of Economy, Efficiency, and Effectiveness. Since that is now so widely disseminated in decision making settings as a key technique for strategists and consultants, it was a device through which their accounting-based statements could present itself as aligned with the ways of thinking of experts outside the teams, and so creating a potentially shared commitment to their proposals.

A final finding was that the implementation of environmental accounting was made to happen and experienced in a third way, too. In this third mode, environmental accountants experienced the implementation of environmental accounting at the level of their own selves. The implementation of environmental accounting practices moved from the domain of acts to a new systematic kind of incorporation into the domain of thought and 'care of the self'. Or putting it in another way, these subjects were, through their 'experience' in the Foucauldian sense, constituted not just as objects of accounting but as subjects implementing it. This reconstitution of the subject was also integral to their becoming 'the environmental accountant' but in

such a way as to become ‘transformed’ into green ethical subjects exercising the ‘green truth game’ on themselves.

Since these environmental accountants are recognised as skilful legitimate subjects, who are good at the green truth game (and who also have their own location in the organisation’s structure), they are well placed to disseminate practices of, and a commitment to, control over environmental impacts to all members of their organisation. They have started doing that by exercising this environmental game of true and false on others within and across their organisation by disseminating forms of written ‘statement’ – e.g. customised notices, statements or logos conveying environmental statements or truths relating to each specific building or department in the organisation. These texts can then be adapted to different formats and laid out in different styles for incorporation into internal bills, energy display certificates, departmental noticeboards, TV screens, internal meters, and charts and diagrams disseminated across the organisation. Whatever the format or medium, the texts underline the presence and even ubiquity of named numbers in the solutions of environmental problems.

By these means, environmental accountants exercise their green game of truth on others, for example, students via energy competitions amongst halls of residence on campus and presenting the environmental statement (truth) in the form of colourful ranked diagrams in accommodation and designated webpage (Appendix 10). It is through the ‘distribution’ of these statements that environmental accountants convey or disseminate these normalities and environmental forms of veridiction to groups

within the organisation and so potentially act on the actions of others. [For example, comparing halls of residency with each other in terms of energy consumption may reshape conduct, as happens in departments with the formulation of new bills.]

Moreover, by putting named numbers into circulation by submitting them into EMS[81], environmental accountants have been enabled to retrieve that data, and see their university within the bigger context. So, in University X they can see the position of their university (or how they are ranked) amongst other universities in the UK regarding, for example, water consumption. This 'circulation' of environmental accounting statements results in the generation of new environmental knowledge for environmental accountants about their university within the whole HE sector. This knowledge (which is up-dated regularly) can give them new perspectives or show them bigger pictures, on the basis of which they can then evaluate their organisation within a bigger frame of accounting-generated truth – thus intensifying the play of knowledge relations and power relations.

Finally, different environmental accounting statements were found to have been put into operation across all organisational functions with the adoption of new types of environmentally-focused equipment and forms. These included such innovations as utility invoices (from suppliers and re-charging ones), meters (main and internal ones), energy display certificates, competition charts, live screens, charts and diagrams in campus events, picture-based social-media competitions, reports to Salix and the Environment Agency, and annual reports and other publications. The ongoing 'operation' and circulation of statements is performed by the 'equipment'

[81] Figure 2

whether via paper or screen or electric media, and whether in narrative report form or spreadsheets or some mix of format.

The next 3 sections seek to shed more light on how accounting operates in these research settings by moving in two parallel directions, to consider ‘what accounting is’ and ‘what accounting does’ in this backstage world and beyond it, so as to contribute to sustainable development.

6.3. Accounting as Creator?

Two points are important to be mentioned here. First, environmental accountants have started the process of ‘learning’ how to identify, name, count, and write environmental problems from sets of norms (i.e. standards). The characteristic feature of this ‘learning’ is its continuity, i.e. it was more than just a brief training or course. These norms are regularly updated by legislators because they are influenced by the level of scientific ecological knowledge. Therefore, environmental accountants are always in the process of learning which brings continuity to the acts of naming, counting and writing.

Second, environmental accountants’ engagement with regular acts of naming, counting, and writing is intensified due to compliance with an increase in legislators’ requirements on environmental reporting and transparency. In other words, compliance is resulted in exercising the acts of naming and counting environmental

problems regularly (which refers to the 'regulation' aspect of statements)[82] and then writing (or producing which refers to the 'production' aspect of statements) environmental statements in a regular manner, too.

This continuity in the act of writing has built a set of 'records' including files, accounts, and statements which are updated regularly. The existence of these records has enabled environmental accountants to use this historical data to set a 'benchmark' and then evaluate their organisation-wide progress against that benchmark in order to strategise better and meet imposed targets. All the 'old' writing and reports will still be there for constant re-interpretation and 're-strategising', even when new reports are added new measures are created and added and new models are applied. New and old reports can be read and put together and divided up in endless variations while additional information keeps coming in. In other words, by using historical reports in conjunction with new ones, RPs are reading (and re-reading), reflecting (and re-meditating), interpreting (and re-interpreting) what they have recorded and then strategising (and re-strategising) endlessly in their efforts towards becoming an eco-friendly organisation.

[82] Regulation here means both (a) frequency of exercising acts of naming and counting in regular manner and (b) producing named numbers (and statements) in conformity with a fixed procedure, principle, or discipline.

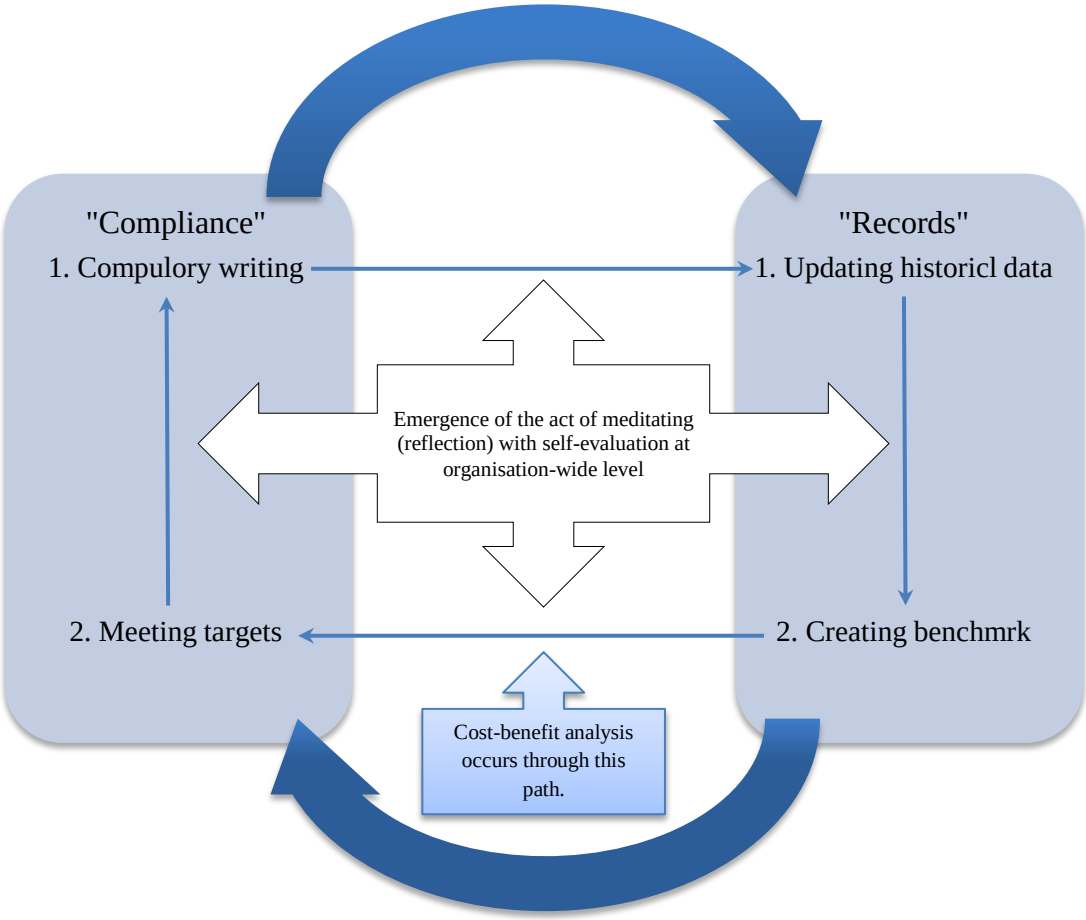


Figure 13: The interplay between compliance, writing, and cost-benefit thinking - Source: developed by author

As shown in Figure 13, implementing the practice of writing environmental data (statements) regularly in conjunction with the legal requirement of meeting compulsory targets has resulted in an emergence of self-evaluation at an organisational level. Environmental accountants have started to examine their organisational performance against their baseline/benchmark. This examination is the result of a combination of the acts of 'writing', 'reading' and 'reflecting' (meditation on what they have written) associated with a green way of cost-benefit thinking – the approach that (I observed) environmental accountants apply at their regular meetings to read and assess what they have done, interpret and reflect on what they have recorded, and strategise for the next step.

Considering three points here highlights the ways in which accounting is applied to achieve environmental objectives. The first is the set of 'norms' (that are rule-bound and teach normalities), centred on practices of naming and counting (e.g. naming and counting in reference with carbon and other greenhouse gases). The second is the 'act of writing', which is in the form of naming and counting (e.g. EMS/Figure 2) as database in form of comprehensive table). Finally, the emergence of a green cost-benefit way of thinking, which encompasses economic/efficiency/effectiveness as accounting-based forms of cost-benefit analysis. These three accounting-based elements signal the bold presence of accounting soul in the backstage of CSR, and more importantly, have led environmental accountants to start reflecting on environmental issues.

Environmental accountants have gone beyond compliance, and therefore beyond the state of being an active subject. Through this reflection they are acting on (restrictive) actions of lawmakers and authorities (e.g. sustainability team against HEFCE, even though it could also be departments against Estates Office) through thinking, acting, and strategising green.

In another way, RPs as subjects of environmental accountancy have also established a mode of relation with their team through which they are exercising their power to examine their organisation's environmental performance i.e. by holding regular meetings. In other words, the sustainability team has established a mode of relation with itself in which it has become both subject and object of this evaluation – a mode through which they are 'transformed' into an ethical team (or subjects) that is both (a) good at exercising environmental true and false over itself and (b) accountable to its ecological impacts/developments. As a result, they collectively become a pro-active 'sustainability team' (subjects) in addressing environmental issues and bringing control over them. Exercising power over their own team and organisation indicates that they have learnt the green game of truth, and are applying that within and across their entity through 'strategising' green.

In other words, this is the time when RPs as 'writers' of records become 'readers' (or 'recipients') of those recorded environmental information and this 'readership' position engages them with acts of 'reflection' and 'meditation' about environmental performance at their organisation and consequently act upon (a) their own sustainability team (regarding how far they have achieved their targets and

objectives) as well as (b) other groups of citizens within their organisation (in terms of 'strategising' for further actions over their non-green actions), which both contribute to their reacting response to acts of authority and legislative bodies (e.g. HEFCE). This is one of the occasions which show how RPs as readers/recipients of disclosed environmental information become 'pro-active green subjects' or 'participants' (in Gray's terminology) who not only are trying to be 'accountable' for their team and organisation but also have become actively engaged in contributing to build a green university through their pro-active subjectivity or participation in green programmes.

To conclude, forms of accounting applied in sets of norms, acts of writing-reading, and cost-benefit ways of thinking have brought a transformation through which the creation of a new subjectivity (or participatory) has occurred within sustainability teams (and environmental accountants), who were initially formed as codified subjects by codifications. In brief, this suggests that 'accounting is creator' which 'creates new subjectivity' that participates pro-actively in developing environmental agendas.

However, this green pro-active subjectivity, which is created by accounting-based practices, is not limited to when environmental accountants are in the workplace. Conversely, the creation of this green conscience has expanded the scope of green acts of environmental accountants beyond their workplace to their personal lives. It is due to this accounting-based creation that environmental accountants are individually enabled to establish a mode of relation with their own selves when, for

example, considering reasons for an increase in their home electricity bill (UTA_1). Each individual environmental accountant has made him/herself object of his/her self – i.e. subject and object are one person. Through this, environmental accountants implement environmental accounting for their own lives by naming and counting their own environmental impacts. It means that the implementation of environmental accounting moves from the domain of act to the domain of thoughts and is re-sized from scope of organisation to scope of individual. This transition between domains and scope relies on this very accounting-based creation, by which thought starts shaping acts as well as regarding the importance of the environment. Hence, creation of this green conscience within environmental accountants' selves assists them not only in having (and practicing) the art of being and living green, but also to have (and practice) the art of thinking green at all times – a state of thinking, acting, and living which constitutes them green subjects or participants in making the world green.

This investigation suggests that the experience of implementing accounting practices where and when they have environmental intervention has resulted in an interplay between accounting as practice and human subjects, by which an ethical green-accountable subjectivity is created inside the subjects' selves.

6.4. Accounting as Statement?

This section will continue to analyse how accounting is acting behind the stage of CSR-oriented reports. It was said above that accounting takes the role of creator in its interplay with environmental accountants (i.e. subjects) and creates ethical green-

accountable subjects (or subjectivity/participatory). However, scrutinising the distribution of environmental statements reveals a new possible role for accounting to contribute to sustainable development via environmental intervention.

The 'created' ethical subjects, who have gained qualities and skills in speaking, labouring, and living green and accountable, have established a mode of relation with other sections within their organisation. They have done so because they want to bring more focused control over the environmental impacts of other areas of their organisation. In other words, they would like to exercise their power over the non-environmental actions of others within the organisation in order to reduce their environmental impacts.

They have made this mode of relation with others through distributing environmental statements within the organisation. By sending out the recharging (internal) bills to departments payable to the university and including new types of named numbers, environmental accountants exercise their power over those cost centres. These newly added named numbers represent the energy consumption plus carbon units emitted. Whilst the way in which environmental accountants are exercising their green power over the non-green actions of others (e.g. departments or university accommodations in energy competitions) is dissimilar, there are also some similarities (or regularities) between them.

First, the recharging bills are employed; they are written or presented in the form of naming and counting – e.g. number of kWh electricity or countable units of CO_{2e}. in bills versus presentation of amount of kWh electricity consumption in the form of

longer or shorter lines in ranking charts of competitions even though the calculated consumption figures are not included as such in ranking table (Appendix 10). Second, cost centres or halls of residence are objectified, making them visible to the Estates Office, and brings them under evaluation (or green form of cost-benefit analysis) via being named as a cost centre and counted for their consumption. Therefore, the writer exercises his/her power over the reader through distributing environmental statements to them, and then engaging them in the act of reading. In addition, as it signals, these two similarities are nested around accounting-based practices.

Moreover, the point that matters regarding the distribution of these named numbers as environmental statements (even if numbers are converted to shorter or longer lines in ranking tables of energy competition) refers to the influence they have on their readers, in different forms and extent though. For example, when students at accommodation halls become the readers of these ranking tables they realise and learn that the environmental problems at their accommodation are significantly linked to electricity consumption and this reading might cause them to be more cautious about their consumption behaviour. This proved to be the case when, in another online competition, they actively demonstrated how well they had acted in green ways by posting their photos to a dedicated Facebook page illustrating how they are saving energy in their everyday life.

In another example, when the departmental managers at University X receive recharging bills from Estates Office, by reading their energy bills, they learn that the

environmental problems at their building or department are linked to their gas consumption and the consequent calculated carbon emission which are reflected in their energy bills. This is also the case at higher level when Sustainability team receives the message from HEFCE and other authority/advisory bodies to cut their emissions in line with governmental targets. Therefore, they realise that (a) environmental true and false at their university is evaluated by the number of counted carbon units, (b) the environmental normality of carbon emission at their site is defined up to a level which is annually lower than previous year, and (c) due to continuity of this requirement, environmental normality of carbon emission at their organisation will be re-defined up to the required annual percentage lower than current year. Therefore, they learn how to name and count, how to write the named numbers, and under what normality they (and the whole university) will be evaluated. They also learn what is recognised as an environmental problem, particularly at the local site relevant to their activities.

This relationship between writer and reader is also established via internal/remote meters. The body of human subject (as writer) and piece of paper (as note holding the text/statement) is replaced with a digital meter and live numbers; however, the act of writing (in form of naming and counting) is still taking place. It is the act by which, specific managers at departments, operating sites, or those students who are using remote meters at their accommodation have become readers of such digitally produced text. However, in any shape it appears (conventional or modern) it is still the act of writing in the form of naming and counting.

In general, they (i.e. readers) have received/read a text (or statement) which is in the form of naming and counting, and represents the writer of that text to them (i.e. readers). Although the body of writer (environmental accountants) is absent, the statement presents the writer as in front of the reader, telling him/her that electricity or natural gas consumption at their department or building is the source of an environmental problem, which needs to be managed. It suggests that environmental true and false is distributed by a written statement. Furthermore, it indicates that accounting is manifested in the shape of statement because text holds the acts of naming and counting. The reader, by reading statements, does the acts of naming and counting in his reading, and through this reading he/she learns the green game of truth.

The reader, by learning environmental true and false, gains a sort of knowledge about their environmental performance. Since they know their building/department more than environmental accountants do, they can make sense of energy patterns in their area. By having access to half-hourly meters, they are reading half-hourly distributed named numbers (statements) more frequently and regularly by which (and in line with their knowledge about their area), they are enabled to find anomalies in their consumption trend. Through this distribution of statements they are able to make sense of a dramatic increase in their gas usage when, for example, electricity consumption has been high at the Art's Centre because of graduation ceremonies. Therefore, distribution of environmental accounting statements to the right people in each area of the organisation has empowered those people to monitor themselves (or exercise power over their area).

The consequence of this empowerment (which is rooted in acts of writing and reading) is manifested in the establishment of a reciprocal relation between readers and writers, via the phone calls that environmental accountants receive from readers of environmental statements. The reason for new contact is requests for advice on how they could make their consumption more efficient. This reaction from readers suggests that they are applying green cost-benefit analysis in running their department. Since they are finding anomalies and/or potential places where there is room for improvement, they are asking for help and advice from environmental accountants. Readers are taking the position of (pro-active) subjectivity (or participatory) by making sense of the named numbers, monitoring them, reflecting on them, and strategising on them, by objectifying the sustainability team through putting them in the position of receiving phone calls or emails asking for advice and assistance in energy efficiency projects.

Then again in return, by responding to such emails and phone calls with advice or by starting an environmental project, environmental accountants are put again in the position of subjectivity – the position in which they are doing two jobs simultaneously. First, they are providing solutions and support to others about a specific (environmental) problem. Second, they are also learning how to face similar issues should they occur at other places within the organisation, as well as possibly within their personal life, e.g. in the instance when their advice to others about using energy saving bulbs impacted on their use of them in their own home.

In brief, a reciprocal relation is built between environmental accountants and some individuals at other parts of the organisation. This reciprocal relation is initially established through environmental statements, which are produced by the acts of naming, counting, and writing. However, due to availability of devices other than just 'paper', this reciprocal relation and communication is kept live and continuous via phone, email etc.

This reciprocal relation between writer and reader also existed when University X was on a pilot programme to prepare an action plan. They were writing reports at the end of each phase and then sending them to the Carbon Trust, who were then assisting them in terms of introducing sustainable technologies, measuring their environmental footprint, and providing advice and consultation to boost their environmental development.

Moreover, this reciprocal relationship also appears between environmental accountants and students who use remote meters at their living place close to university. This interplay and reciprocal relation between writer and reader also occurs within 'one self' when, for example, UTA_1 installed one of the remote meters at his home. He, as environmental accountant, records environmental incidents of his own personal energy consumption via meters and then reads the produced numbers on his computer – the reading which has resulted in becoming more careful, measuring himself, and being accountable to his own self, as he says. According to his own experience, he believes they could have a change in energy consumption

patterns at University X with the help of such remote meters, making them accessible to as many people as possible.

Such a writing-reading relationship is attempted on a wider scope at University X by means of TV screens at buildings showing live electricity consumption and its equivalent carbon emission in that building. It gave me (as reader) a general understanding about the energy behaviour of that building, and made me consider my own behaviour as contributing to consumption shown (e.g. charging my mobile phone). I suddenly noticed I was imagining that TV in my own mind regarding my own energy behaviour and evaluating myself. Although not everyone looks at those screens or may not necessarily think in the same way, it seems this writing-reading relation at a public level is not without effect.

Students could be considered to be a difficult grouping for environmental accountants to build such a reciprocal relationship with, and the problems lie with the type of written statements they are receiving. No statement is sent to them regarding their utility consumption and by paying a fixed amount each semester, the path of distributing environmental statements is blocked in this area. Therefore, very low-level success in such areas (in comparison with considerable response from other groups of people and success in such areas) suggests that those areas with high response which are conventionally recognised cost centres for the organisation are becoming ‘responsible/accountable centres’ due to learning the acts of naming and counting through the act of reading. It is through this learning that readers are able to gain the position of subject by making sense of named numbers, monitoring his/her

department/living place, applying the green truth game in association with cost-benefit analysis, and producing environmental truth or solution.

Hence, it suggests that the ethical green-accountable subjectivity, which is created by accounting, is spreading through organisations via distribution of environmental statements – the statements which (a) are written and read in form of naming and counting, (b) convey the environmental true and false (but relevant to that responsibility centre), and (c) stimulate employment of a green truth game in conjunction with cost-benefit analysis. These three factors recall how the same elements (in the previous section) resulted in the creation of ethical green-accountable subjectivity and implies that environmental accounting statements have the same qualities of those elements. By holding the same qualities and bearing the same results, it indicates that forms of accounting in their interplay with subjects (who were initially objects as readers) are creating ethical green-accountable subjectivity (subject) in other areas of the organisation.

In brief, accounting is again creating ethical green-accountable subjectivity whilst being manifested 'as statement'. Through this, more similar environmentally-committed subjects are created as active sense-makers who are assisting the sustainability team (e.g. at the Estates Office) to analyse named numbers, make sense of them, identify anomalies, and find potential sites for further improvement. It means that the community of subjects who are 'participating' in Gray's terminology in generating environmental truths/solutions is expanding by means of accounting (as statement) and via the reciprocal relation of writing-reading, even though they

(i.e. readers who are now become subjects) are not members of the sustainability team.

There is one other noteworthy point to be highlighted in parallel. This 'green strategising' in terms of acting upon the non-green actions of others is not always implemented through 'doing or saying something'. Although there is a diverse range of environmental accounting information which RPs disseminate within their organisation, they also apply 'self-censorship' as a strategy to act on the actions of others. RPs observe that having environmental information is one thing but knowing how and when to disseminate it is something else. Simply spreading statements can have negative effects if the form (and/or time and place) of dissemination is inappropriate. The claim, for example, that 'utilities team have changed the equipment for air-conditioning and now we are saving the equivalent of 10 flights to New York every day' is the kind of statement that might potentially cause some to think that "the Estates Office got this under control and I don't need to bother". In other words, "I don't need to be worried about my own personal energy consumption because the Estates Office is thinking about that instead" (UTA_1).

Hence, acting upon the non-green actions of others can be strategised either in the form of (a) mobilising accounting in the manifestation of 'statement' in order to create ethical green-accountable subjectivity through distributing environmental accounting reports to relevant readers or (b) creating 'silences' or 'censorship' in such disseminated reports.

6.5. Accounting as Conductor?

The third possible role which, it may now be argued, accounting plays in contributing to sustainable development occurs during the 'circulation' of environmental accounting statements. Section 6.3 discussed the formation of sets of records and how this relies on a regularity and continuity in implementing acts of naming, counting, and writing. Submission of named numbers to databanks such as EMS (Figure 2) and updating them on a regular basis enables the circulation of this range of information in a wider context. After submitting data to EMS, University X's environmental accountants use this databank to see their environmental position (ranking) within the HE sector. It means that the already-submitted data is returned to them with more auxiliary information (i.e. the same category of data about other universities), and all again in the form of named numbers. Therefore, environmental statements are circulated not only between University X and HESA via EMS, but also are being circulated across the whole sector.

In the circulating of these statements, accounting is travelling across the whole sector and so University X's environmental accountants find themselves using EMS data to evaluate themselves within the sector. So when, for example, I observed UTA_2 download such information regarding water consumption, it became apparent that he was examining their university against others. This examination then led to the team concluding that they needed to focus more on water consumption because they were ranked at a very low level compared to others.

Through this, they are observing themselves within a 'whole picture' frame, and that frame is leading, directing, or telling them in which areas they need to make their consumption comparable to others. Although they are not in direct contact with other HEIs (since this communication between universities is happening only through named numbers and sets of records), they are learning or understanding where they need to focus more effort. This closeness induced by ranking does not necessarily mean that they feel that they have to compete with the whole population of 'others'. For instance an HEI that is an agriculture institute is likely not to see comparisons of its environmental impacts with those of an art college as meaningful. However, this circulation of environmental statements is enabling them to see themselves within a series of bigger pictures, some of which (typically those made up of close competitors) will be a particular focus. This gives them a direction or guide as to where to put more effort, in order to contribute more to the environmental performance of the HE sector.

In sum, RPs at the Estates Office are observing and communicating with their peers through the text, statements, and named numbers. In this process, the text arguably takes on a different function, regardless of the original 'authorship' or particular documents or sections of documents, where it enables a kind of circulation across subjects of statements and interpretations which generates certain forms of 'self-reading' via the text. Different subjects will engage in such self-readings in different ways, but if such readings are dispersed they are also shared and so may construct a form of community where a form of self-reading generated out of the circulation of and commentary upon texts operates as a means to possible self and group

improvement or a form of guidance which directs subjects to see and act on their strengths and weaknesses, as they also see others acting similarly. By bearing in mind that accounting can manifest in the shape of statement (section 6.4), it can be concluded that accounting is doing the job of guiding, directing, or conducting environmental accountants through the circulation of statements.

It is here, I suggest that accounting-based practices may be understood as playing the role of an orchestral conductor. Just as a piece of music is composed in musical language; so environmental statements are in the form of named numbers, e.g. number of carbon units. When a piece of music is arranged for an orchestra, not only the original melody of the composition must be kept untouched and still audible, but also it is not possible to expect all different families of musical instruments[83] of an orchestra to play exactly the same melody and part. Obviously, the sound range and characteristic features of each musical instrument differ from the others and they need to play their own parts of the arrangement. However, the key point is that there must be harmony among dissimilar parts played by all different families of musical instruments of an orchestra in order to keep the original melody untouched and perfectly audible at the end. This is to say, all various musical instruments of the orchestra are assisting each other to play 'one' piece of music at the same time, whilst each playing their own parts, which are dissimilar from other players' parts.

Accounting arguably has this role in making different things visible as 'more or less the same' through such techniques as translating them into named numbers such as carbon targets and promoting the evaluation of alternatives through cost-benefit

[83] Examples of families of musical instruments are Woodwind, String, Brass, and Percussion.

analysis. So when for instance there is a target such as 80% carbon reduction in the UK's public sector, not every sector, organisation, department, building, or even piece of equipment will have the same environmental outcome. However, order and coordination within and between organisations takes place through how accounting makes it possible to (in a revealing metaphor) 'orchestrate' the meeting of the target. Thus we may perhaps read the diversity in action with which universities pursue their own environmental targets as all parts of 'one' performance, one aim, and contributing to one target. One may recall HEFCE's advice to universities (Chapter 4) to choose their own best way forward: at one level this implied diversity in action/practice across the HE sector (and a commitment by HEFCE to apparently being non-directive). At the same time, all were supposed to be committed to 'one vision', 'one aim', and 'one target'. The reconciliation of these two dynamics was in large part (once seen through a bottom-up lens) through accounting, which was thus the conductor of this seeming 'counterpoint' of different processes enabling them to proceed to a 'harmonious' conclusion.

This is very similar to an orchestra performing one piece of music with the combination of different musical instruments playing dissimilar parts together. However, when they are playing their own parts in harmony with others, they do not look at each other, but the conductor. It is the conductor who directs them, and functions as the focal point for the action of all.

However, the difference here consists in the embodiment of the conductor 'function'. Where for an orchestra, the function is embodied in a human subject, when it comes

to environmental action and statements the case can be made that it is embodied in the accounting which constitutes the statements which orchestrate the possibility of harmonious outcomes. Here, if the RPs play a first role insofar as they compose the 'score' which will potentially form the basis for the 'performance' of environmental initiatives, the orchestra is then made up of all those who then engage in that performance, based on the knowledge they extract from the circulated texts, statements, and named numbers, which 'direct' them to see themselves as operating among a whole cast of players in the bigger context, whether their focus is more on reducing water usage or energy conservation. Therefore, the conductor is inside the text or, rather, the conductor is the text – the text that is written in form of naming and counting.

Looking a little more closely, one may perhaps suggest that the accounting-based text (with its named numbers) is conducting RPs in terms of telling (or signalling/directing) them what is environmentally 'true and/or false' about their performance compared against other universities. For example, when UTA_2 observes the EMS-based league table showing that their organisation is poor in water consumption compared to other universities, he understands an environmental 'true and false' about their water consumption – an environmental true and false in the form of ranking table. This has directed him and so also the sustainability team to think more about what they could do to save water.

In such ways it is possible to suggest that accounting is perhaps acting as the 'conductor' in terms of sending environmental 'true and false' signals to

environmental accountants about their position, whether in absolute terms or relative to the named and numbered performance of others.

6.6. Chapter summary

This chapter has sought to discuss the major themes that have emerged from the narrative developed in the empirical chapters revealing how, from a bottom-up perspective, accounting operates in University X within the subjects and across the organisational spaces concerned with environmental issues. It has considered how RPs come to think and act in ways that constitute them as, and get them recognised as, a form of 'environmental accountant'. It has sought to deepen understandings of how, in a context where cost-benefit optimisation becomes the strategic path for implementing environmental innovations, accounting-based statements articulating this path get constructed by RPs and then disseminated, from the time of their initial formulation and production across the whole process of their circulation. It has also sought to indicate how this path is one where pre-existing norms, favouring accounting-based solutions in the organisation more widely, get incorporated into what become norms of making statements in 'green truth games'; it has then traced some of the processes through such statements get more or less widely accepted beyond the sustainability teams as the statements circulate through organisational sites both central and local.

It has also sought to indicate some of the means of dissemination and circulation of statements emanating from these truth games, drawing attention to the adoption of new types of environmentally-focussed equipment and forms and to the insistent

dissemination of messages via logo's, notices, etc, in both paper and electronic formats. This is one more way in which named numbers are embodied in everyday work settings as a solution to environmental problems, whether in the work setting of the RPs themselves or elsewhere.

This 'insistence' of accounting may then itself be seen as functioning as an apparatus through which the increasingly ethical green-accountable subject is producing environmental statements in his/her mind (while thinking/reflecting) about his/her own environmental behaviour.

As discussed in this chapter, forms of accounting as statement and practice disseminate and gain purchase through various forms of interplay with subjects (environmental accountants) as the latter seek to promote environmental benefits. In analysing this interplay, the study has suggested 3 possible roles that accounting plays in contributing to sustainable development via addressing environmental concerns.

First, accounting arguably enters as 'creator' as means through which is constructed or created an ethical environmentally committed and accountable subjectivity. It then takes the shape of 'statement' and expands the scope of ethical creation when such statements are distributed within and across the organisation. Finally, it appears in position of 'conductor' in terms of directing RPs (subjects) to engage in seeing, reflectively, and listening reflexively to the playing of the environmental or green truth game by themselves and others through a re-reading or re-writing of texts and statements, in ways which may promote their acting more in harmony with other

subjects. One suggestion has been that across these roles there is not a simple 'positive' process through which accounting 'gains purchase' on thinking and acting. For instance readers/recipients of environmental accounting information can be aware of, and act in reaction to, the 'silences' in what gets said, and develop a sense of a 'censorship' being in play. Such readers are therefore not passive receivers of a 'truth', but active participants in both the circulation of statements and an ongoing process of challenge and question towards whatever truth has been established as 'received truth' so far.

Such an active construction of truth statements which challenges received truth is one aspect of the work of RPs which has emerged across this study. It has become clear that RPs think and act not just in terms of ensuring minimum targets are met under some form of 'optimising' cost/benefit regime but show themselves to be working consistently to engineer optimal outcomes to the highest levels they deem achievable, and to construct valid and accurate statements that can carry conviction as truth statements pointing towards the desirability of such outcomes and so may hopefully enrol as many as possible of those who will have to deliver such outcomes. In this regard they are arguably putting opposition/antagonistic strategising to work as they seek to act on the actions of others as ethical subjects, something that they are able to reflect upon, as this is what they may well see themselves as doing as well. One sign that this is part of what takes place is a recognition amongst subjects that a 3 E focus is enabling management of environmental problems to be put into practice in ways never imagined. At the same time, RPs typically remain of a view that reaching significant environmental achievements is extremely difficult,

particularly in the near future as they perceive even achieving minimum targets as challenging.

Chapter 7: Conclusion

7. Introduction

This study set out to explore how accounting statements and accounting practices might be having 'bottom-up' effects on the development of environmental initiatives and environmental discourse more generally. It chose to explore this possibility through using a 'bottom-up' approach, basing itself theoretically on recent re-readings of Foucault as a 'bottom-up' theorist of thinking and acting, and then seeking to follow how RPs, who have emerged as key constructors within organisations of environmental reports and initiatives, draw in their work upon, and are shaped in their thinking by, accounting statements and practices.

This approach to studying accounting through a close-up look at how, where and when environmental accounting statements and practices have effected (or affected) environmental interventions was envisaged as a potentially valuable, and perhaps in some respects distinctive, contribution to understanding the 'green' play of accounting. As this narrative comes to an end, this final chapter starts with a brief discussion about what has been achieved. Thereafter, the contributions of this study are presented. Finally some key limitations of the study are discussed and evaluated, leading to a discussion of how these could be addressed in future work, which might open new doors for further investigation and form new research questions. The study then ends with brief conclusion.

7.1. Towards the realm of environmental/green accounting

The potential value of this approach was initially considered by reviewing the existing research literature on SER, particularly environmental/green accounting and

disclosure practices, and grounding the possible use of a Foucauldian approach of a kind increasingly emerging from Foucauldian research in recent years. On the basis of the review of the green accounting literature it was suggested that two major streams of analysis could be drawn upon to build the grounds for formulating a new research question of the type envisaged here.

The first consisted of work raising doubts about the level of effectiveness and potency of current accounting theories in terms of their capacity for environmental 'problem-solving' and for effectively translating accounting into a means or medium for generating environmental 'solutions'. This form of analysis raises concerns about how accounting's continuing roles appear predominantly to serve profit-maximising agendas in line with conventional business and economic ways of thinking in which consideration of the 'physical environment' and the costs of man-made 'pollution' have typically not been significantly operationalised as budget factors or cost categories. Such analysis has implicitly raised the problem of how this kind of accounting can contribute effectively to generating significant environmental change without a revolutionary theoretical turn in which 'nature' would no longer be a 'neglected aspect'. In other words, even though, it is clear from the research literature that a growing number of organisations are incorporating green accounting-based analyses into their business plans, budgets and accounts, it is not clear to date that such innovations are generating effective environmental improvements on a sustained and global scale. There may be a genuine recognition in many corporations of the social and economic importance of combating global warming, or of the direct importance to their organisation and brand of implementing green accounting

practices and being seen to do so in the CSR section of company annual reports. But whether this is sufficient is now becoming a theoretical as well as a practical issue, under this form of analysis.

The second stream of analysis identified is one that engages with the Social Accounting project initiated by Rob Gray and his co-authors, and the possible limits to its theoretical aspirations to make a 'critical' difference, particularly in the light of its initial trajectory as a project articulating an approach to developing a green accounting from which there might emerge "a universe of all possible accountings" (Gray, 2008, p.6). The trajectory since can be seen as having set in motion a number of important possibilities through which accounting might constitute a reformist means in building a society based on participatory democracy in which accountability would be a pre-requisite and therefore accounting could be "an essential component of a democratic society" (ibid., p.7). However it is again the theoretical adequacy of the approach which has come under critical question with a key issue being whether a reformist agenda is sufficient to deliver the radical change which increasingly appears necessary. Such critique has raised the theoretical question of whether the 'universe of all possible accountings' is in fact represented, and whether therefore a necessarily more 'critical accounting' now needs to be articulated. The conclusion here has been that these two forms of theoretical analysis raise, in different but complementary ways, the importance of re-thinking the *scope* within which there might develop a range of 'critical' forms of analysis which might open new doors towards problematising, approaching, and understanding environmental accounting.

This then led to the suggestion that one potentially valuable way of grounding a 'critical' form of analysis would be through taking up a Foucauldian bottom-up approach, as then reviewed. Given the focus that Foucault can now be seen to have had on beginning from the levels of thinking and acting, and on how this entails an initial bottom-up focus (a) on what gets said (and not said) at the level of 'the statement' in any given era and (b) on the practices that constitute in that era the 'conduct' of those making and circulating 'statements', this study then sought to investigate how accounting 'discourses' and 'practices' are being put to use to promote green initiatives in organisations which have an explicit commitment to making an environmental difference in their everyday working practice and in the services and products they produce, even though their overall operation is still run within a capitalism-focused economic setting. It was envisaged that such a study, by starting via a 'bottom up' approach to focus on the level at which subjects with a commitment to promoting positive environmental outcomes operate as experts to construct accounting-based initiatives, might shed light on the generating of environmental solutions and the playing of 'environmental truth games'.

Therefore, to find out how accounting 'discourses' and 'practices' are put to work to enhance environmental performance in organisations this study was centred on investigating the research question: 'How far is environmental accounting adopted and how is its implementation made to happen?' This then led to a supplementary question, in the light of how Foucault can sees 'experience' as a key construct capturing how in a given era forms of knowledge interplay with modes of conduct as well as the subject's relation to the self as object to frame one's emergent and

reflexive ways of thinking and acting. This question therefore asked: 'How is the experience of implementing environmental accounting and disclosure practices made to happen?', or putting it in a narrower way: 'How and how far are accountants and other RPs implementing environmental accounting in practice and generating environmental information?'

To investigate these questions, the study focussed not at the level of environmental and CSR-oriented 'reports' as such, but rather on the 'process of reporting' and the subjects engaged in that process, as well as on the apparatuses within which the generation of statements took place.

Therefore, to operationalise the research, a mix of archival work (in the sense of working with text-based materials and records) and semi-structured interview work was undertaken, as detailed in the methodological chapter. This was seen as the most appropriate means of (a) understanding the organisational contexts in which the new commitment to green accounting was articulated and (b) discussing with the RPs who participated in the research project both their personal backgrounds (as a way of establishing the range of ways in which they had come to participating in their organisation's green accounting initiatives), and their personal experiences of developing specific green initiatives in their organisation.

In this way, it was envisaged that the research could make a contribution at the level of studying 'practices' as well as the 'discourses' permeated by various types of accounting statement. In this regard, the study was carried out in the form of an ethnographic investigation and by the method of observation, seeking "to explore the

role and functioning of accounting in the environmental and sustainability spheres" (Hopwood, 2009, p.439); more specifically, as I engaged in the process of reflection and self-interrogation as the research process unfolded, the idea took shape that I was observing a form of 'backstage' activity which was the ground within which such 'front-stage' activities as finished environmental and CSR reports emerged, and that this metaphor of the back versus front stage was therefore a potentially valuable one with which to work, as a way of making a contribution in the terms set out by Jan Bebbington, which are to:

- contribute to the current state of knowledge regarding 'what accounting is' and 'what accounting does' in environmental spheres, and
- provide further insight into "how accounting might contribute to the SD [sustainable development] debate" (Bebbington, 2001, p.151)

The main body of the study tells the story of 'how the experience of implementing environmental accounting and disclosure practices is made to happen', and is presented in an interacting way in chapters of 4 and 5, with a range of major issues and findings summarised at the end of each of the Chapters. Taken together, the Chapters draw on the mix of secondary and primary archival and interview material gathered to describe the emergence and circulation of green agendas first in the wider social, political and economic world across recent decades and then to move the focus more to the main research site discussed in the rest of the dissertation, the

UK institution designated as University X, within the UK Higher Education (HE) sector.[84]

These chapters then led to the more 'micro-level' study of the RPs as subjects engaged in drawing upon accounting-infused statements in the construction of environmental reports and initiatives within University X. A particular focus was the ways in which RPs were initially recruited and their backgrounds; the focus then was on how they developed approaches and strategies for making accounting as effective as possible in promoting green initiatives. In particular it was noted how the RPs worked towards developing techniques which would fit with widely-used approaches to bringing accounting into decision-making and budgeting. It became apparent that one frequent solution (and one in line with a practice increasingly adopted not just in private but public sector settings) was to cost initiatives carefully in ways that could produce cost-benefit scenarios, and then to indicate or recommend a particular option as the optimal solution for managing internal costs while maximising environmental benefits.

In all this, I was seeking to explore 'what accounting is' and 'what accounting does' within the sphere of environmental accounting statements and practices from perspectives that Foucault proposed. In regard to analysing how RPs constructed environmental accounting *statements*, I adopted the from set of five perspectives that

[84] As noted in the main narrative, research access was given to a second organisation, a US-based multinational in the aluminium industry with a UK subsidiary. However, since access was finally granted only after the fieldwork in University X was well advanced, and since the level of access was considerably more restricted, the main discussion of this case has been located in Appendix 11. At the same time, findings from this fieldwork have been drawn upon where relevant to illustrate regularities with or differences from the findings in the case of University X.

he proposed in *The Order of Discourse* (Foucault, 1980) as the means for analysing the regularities and silences in particular discourses: i.e. their 'production', 'regulation', 'distribution', 'circulation', and 'operation' (Foucault, 1980, p.133). In regard to analysing how they engaged in the *practice* of seeking to implement environmental accounting and disclosure initiatives, I drew upon Foucault's proposal for analysing 'experience' in any given era as being constructed out of three dimensions: (i) 'a domain of knowledge' (as *savoir*), (ii) 'a collection or ensemble of rules' (of *conduct*) and (iii) a 'mode of relation of the individual to self' (Foucault, 2000c, p.200). Approaching the analysis of the statements typically produced by, and the actions typically undertaken by, RPs in this way led me, as the research process developed, to a view that the ways in which accounting was used to make statements and to take action could be interpreted in terms of accounting playing three successive roles across the stages of preparing environmental statements.

These possibilities were articulated at length in Chapter 6. Here it was suggested that there might be new ways of conceptualising what accounting is and does by suggesting that accounting may be understood in three possible roles as 'creator', 'statement', and 'conductor'. First it was suggested that it functions as 'creator' by giving shape to RPs' way of thinking, acting, and strategising as they constructed their respective forms of 'green' ethical-accountable subjectivity – the subjectivity which was proactive in thinking, acting, and strategising green. Then, second, through a reciprocal 'power relation' (where power is understood, with Foucault, as 'acting on the actions of others') accounting manifested itself as 'statement' and expanded the scope of this 'green' ethical-accountable subjectivity creation inside

the organisation. Third, accounting played the role of 'conductor' in directing RPs when they were engaged in the playing of 'green' truth games among themselves and with others. And it was in these three roles that environmental accounting made positive environmental contributions when Foucault's bottom-up approach led the study towards focusing on the relation between 'subjectivity' (that is composing environmental statements) and 'truth' (which is distributed throughout the production, regulation, distribution, circulation, and operation procedures of such statements).

After bringing the empirical materials and theoretical aspects together discussed in an overview way in Chapter 6, this final chapter now continues with clarification on contributions it has made.

7.2. Contribution of this study

First, I would suggest that the study has made an empirical contribution through showing how, at least in a preliminary way, it is possible to draw upon Foucault's form of theorising to undertake a distinctive form of 'critical' analysis of how accounting works in contexts where green or environmental issues are at stake, approaching this problematic in a 'bottom up' way. Part of this empirical contribution is to show how contemporary accounting as a practical system of generating and preparing CSR-oriented reports is acting as "a mode of 'writing the world'" (Hoskin and Macve, 1988, p.68) in the form of a "naming and counting" (Frandsen, 2009) which has in this contemporary context begun to generate a range of categories and metrics around such constructs as the 'carbon unit'. However,

although accounting shows its technical capability to re-write the world through such constructs in ways that result in generating new environmental truths, such accounting-based statements and practices do not function purely as a set of 'technical' devices as they contribute to generating contemporary green reports. In other words, there is more than just a "technological aspect" (Foucault, 2000b, p.317) to accounting practices, even though that aspect needs acknowledging in its own right.

Secondly, at the empirical level, the bottom up analysis of these accounting statements and practices has shown how they have variously assisted, enabled, empowered or stimulated RPs to construct a zone of relative 'freedom' where they can act upon and react to the non-green actions of others inside (and to some extent outside) their organisation. Various aspects of this play and counterplay were noted, e.g. automatically enrolling residents in university accommodation in energy reduction competitions and giving prizes to the winning hall in University X.

As such events materialised, it was possible to conjecture that certain rules or norms of conduct within and across the organisation were opened up to change or modification and that this was consequent on the dissemination of environmental statements. For such events constituted an invitation to the individuals and groups in different Halls to challenge 'silences' which had been made visible through accounting-infused environmental statements linking the costs and benefits of local, small-scale energy conservation actions; and what was apparent was that such individuals and groups were 'energised', so to speak, to undertake such actions in a

committed and consistent way, where previously they had not been. This arguably indicates how accounting, from the bottom up, may have its "strategic side" (Foucault, 2000b, p.317), in the form of initiating a new and effective way of 'acting on the actions of others'.

In such ways, it was possible to exemplify certain aspects of some emergent and potentially significant applications of accounting statements and practices to promote the cause of 'green power' in society, through saying what was not said previously and at the same time constituting a basis for new ways of acting on the actions of others in what therefore produced a new way of 'strategising' for the reduction of man-made environmental harm. One contribution of this study is perhaps to make visible in its turn how strategically useful this sort of cost-benefit optimising approach might be going forward in seeking to address a whole range of environmental problems more effectively.

Other contributions perhaps include making visible empirically how far the two areas of Financial Accounting and Management Accounting overlap in doing 'green accounting', since the management accounting style of cost-benefit analysis where strategically successful was always then integrated into Financial Accounting texts and discourse so that technical and strategic dimensions of both forms of accounting became discursively merged. But this is arguably a specific example of something that comes more generally into visibility as a consequence of this bottom-up approach: the extent to which forms of 'transdisciplinary' expertise are brought

together both within and across individual subjects as they engage in addressing environmental issues in accounting-infused ways.

So those with existing accounting expertise find themselves making statements orally and in writing that merge in various ways the supposedly different spheres of financial and management accounting. But more generally experts with 'trans-disciplinary' forms of knowledge, and usually little or no prior training in accounting, became what were described here as 'environmental accountants', as they worked within the RP frame of reference to generate initiatives and reports within the cost-benefit optimising frame. The research showed how they worked on environmental problems and solutions, in the form of "named numbers" (Frandsen, 2009), and so came to operate within an 'environmental truth game' through such practices and discursive regularities (including the development of ways of strategising on an environmentally-friendly basis).

In such ways, the study has sought to make its contribution by making more visible how accounting as discourse and as practice in practice (i.e. in action) has extended its power to act into environmental fields through locating itself within various forms of 'trans-disciplinary' knowledge base. Insofar as it succeeds, it may again more purchase not only in shaping the ways of thinking, acting, and strategising of the RPs *as* environmental accountants, but also in spreading this 'green' way of thinking, acting, and strategising inside and perhaps beyond organisations adopting such green accounting practices and discourse.

Therefore, insofar as accounting can be seen here to (a) have acted as, or in the form of, a trans-disciplinary knowledge base and (b) to have had on that basis certain at least of its 'green' effects, it is possible to conjecture that its power may not have to be limited to operating within currently dominant parameters of business and economic thought and practice (cf. Hoskin and Macve, 1986), even though the general field in which environmental accounting is employed and implemented is (or influenced by) capitalism-focused context.

Finally this study has attempted to make a contribution through suggesting new ways of conceptualising 'what accounting is' and 'what accounting does' through its suggestion that accounting may be understood in three possible roles as 'creator', 'statement', and 'conductor'.

7.3. Limitations of this study

The study has had to face the limitations attributed to all case studies, insofar as there can be no immediate claim to generalisability across a wider scope. At the same time, as widely noted, the view of this aspect of case studies as a 'limitation' is grounded in the assumption of research as contributing to a knowledge field which affords the possibility of generalisation of findings; and this is an assumption that is (a) not proven and (b) subject to radical critique given that the subject matter of all social or human science research is the world of human beings and the subjects who make up particular worlds or cultures each with their historical and geographical specifities. Within research traditions which begin from understanding humans from within a philosophy or principle of 'difference' as with the work of Foucault, but

also Derrida, Deleuze and others, generalisability is problematic not a given. Foucauldian work tends towards searching for regularities within a frame of difference, and this has been the approach attempted here, as in much recent case study and qualitative research.

That being said, one clear limitation of this study is that it is attempting to draw on a particular and recent set of reinterpretations of Foucault's overall project, which leads to two possible issues of concern, one more empirical and the other more theoretical.

First, empirically, there is no significant body of studies undertaking the kind of mainly 'synchronic' field-based study of subjects in action and drawing on this kind of reinterpretation of Foucault's work. Therefore there is no significant comparison base against which the 'regularities' (and 'silences') identified here can be evaluated. So for instance the study can only offer indicative observations that the regularities noted here as a result of undertaking this research, particularly the adoption of a similar cost-benefit optimising strategy by RPs in different sites and times within the university studied, will appear as regularities elsewhere in future as well.

Similarly, the choice made here to follow RPs rather than focus on other sets of subjects who interacted with accounting-infused statements and initiatives is a limitation which only further research can address. The choice was made on the ground that this set of subjects was the 'first line' of those interacting with such statements and initiatives, and can be plausibly defended as a reasonable choice on that basis; at the same time it has meant that the responses and reactions of readers

and recipients to the actions and statements of RPs remain a crucial area of research concern which needs study in order to flesh out the play and counterplay of forms of thinking and acting on and around these accounting-infused environmental statements and initiatives.

The more theoretical potential limitation of this study lies in the fact that it is attempting to draw on a relatively new and unfamiliar set of understandings of Foucault's project and that therefore it has to locate itself within a much wider and well-established set of researches and publications which have followed other and more widely-known approaches, including those concerned primarily with 'practices' or with constructs such as 'governmentality'. The study therefore runs the risk of being understood (or perhaps misunderstood) in the terms set by those established approaches, which potentially, at least in the short term, may limit its impact or acceptance; it also runs a risk over how well it has understood these new understandings of Foucault to undertake a project that conforms to his bottom-up form of analysis. Both these limitations can best be addressed through seeking to contribute to taking these new understandings further through amending and extending the research agenda now begun.

At a more technical level, there is a limitation to the scope of this enquiry, insofar as it has focused on emissions as defined under the categories of Scope 1 and Scope 2 emissions. It has not considered emissions as defined under Scope 3 which result from the activities of organisations that occur at sources they do not own or control. [Scope 3 reporting was still voluntary through the time when the course of this

investigation ended, and so as a practice it was not very much developed.] However this is unlikely to be the case going forward so this is something that future research will have to take into account, not least through investigating whether the kinds of enrolling of others discovered within the organisation can be replicated in outside businesses and partners.

7.4. Further research

Some of the limitations just noted also indicate directions that further research might take. For instance, a new study could start from the side or perspective of readers and recipients. It would also be enlightening to study how or how far cost-benefit optimisation techniques might help to generate environmentally aware ways of thinking and acting in regard to Scope 3 since it very much relies on outside parties. This might generate valuable insights into ways in which environmentally aware organisations and their RPs might act effectively on the non-green actions of other organisations by means of accounting-based statements and practices.

In a similar way, getting access for systematic observation might not only lead to new insights into patterns of regularities but also prove a means of establishing a more long-term relationship with both the RPs and the organisations studied, thus leading both to richer forms of description and to enhanced levels of access for further forms of practice-focussed research.

One such further way of extending Scope 3 based research, albeit one which might pose significant research design problems, could be to investigate situations where an organisation regularly uses an outside provider or contractor, for instance for

travel services, and where , that provider already has its own reporting requirements for emissions under Scope 1 or Scope 2 regulations. It could be interesting to triangulate how emissions come to get reported within each organisation when a Scope 3 type of reporting is entailed, with a view to identifying discrepancies and/or inaccuracies, and the possible effects of a mutual surveillance. While there are real potential sensitivities that would have to be addressed, such research could also be mutually beneficial to the parties involved.

Finally, it was mentioned in Chapter 4 that according to the CCA 2008 the Secretary of State was required to "report on the contribution of reporting" to the UK Parliament as a way to achieve the environmental objectives of the UK Government through the use of good 'reporting practice' on emissions (CCA 2008, Article 84). Clearly Government commitments and objectives shift, but this kind of commitment to good reporting practice alerts to the possibility of following, from a bottom-up approach, how accounting-infused statements operate at levels such as that of national and international level bodies.

So one future opportunity may be to seek to undertake practice-based research at governmental level, either through gaining access to parliamentary activities or those taking place backstage in Civil Service settings (again recognising the sensitivities potentially involved, but also the potential benefits to the interested parties). This could open up the possibility of exploring how or how far reporting on 'CSR-oriented reporting' is or could be significant activity as an extended form of 'naming and counting' playing a role in shaping the ways of thinking and acting of those who

are politicians and/or civil servants in the relevant Ministries or Government Departments.

7.5. Conclusion

This study has attempted to offer a constructive challenge to conventional understandings of what accounting is and how it works, with particular reference to how it can be seen as being put to work in engaging with environmental problems in one large and complex university in the UK Higher Education sector.

As a study of *accounting as discourse and practice and in practice* it has suggested possible 'green roles' in which accounting may act as a practical system of problem-solving for environmental issues. By its reading of accounting as operating in three different roles or characters (as 'creator', 'statement', and 'conductor') in the backstage arena of CSR activity, this study has attempted to reveal "the role and functioning of accounting in the environmental and sustainability spheres" (Hopwood, 2009, p.439) which provides further insights that "how accounting might contribute to the SD [sustainable development] debate" (Bebbington, 2001, p.151) when acts in these three possible roles. It has also particularly done so by seeking to show how environmental accounting has arguably begun to operate as a 'trans-disciplinary' knowledge-based technique to play a new role in contemporary 'green' truth games.

Insofar as it can be seen to have succeeded in these objectives, the study has hopefully indicated some ways in which accounting is contributing in some important and specifiable new ways to generating environmental solutions/truths,

including the possibility of a genuine environmental accountability, and to making possible and visible a non-conventional form of ‘green power’ insofar as it is shaping green ways of thinking, acting, and strategising in modern society’s struggle with man-made environmental problems.

The study has therefore, it is hoped, demonstrated, first, how a study in the field of SER, and here particularly environmental accounting, can be a ‘critical’ study producing a form of knowledge that does not, hopefully, reduce to a form of ‘cargo cult’ science, and second, the extent to which accounting is already being applied as a practical system of problem-solving for environmental issues, and potentially can be more widely – even if there is still a long way to go towards achieving a ‘deep green’ world.

Appendices

Appendix 1: Details of fieldwork at University X

What I did.	How long?
General observation at Estates Office	7 days
General observation across the University	8 days
Energy Manager's meeting with 2 staff from building management systems	1 hour and 21 min
Energy Manager's meeting with Utility Suppliers	56 min
UTA_1's meeting with Finance Manager	2 hours
Visit from CHP with Energy Manager – out in campus	1 hour and 16 min
Meter-reading with UTA_1	1 day
Observation with UTA_1	5 days
Observation with UPE	4 days
UPE's meeting with internal auditor	46 min
Observation with internal auditor	1 day and half
Observation with Environment Manager	3 day
Visit from campus gas station and its administration office	Half a day
Observation with Waste and Recycling Manager	2 days
Observation with Transport Manger	1 day
Observation with Energy Manger	4 days
Observation with UTA_2	2 days
Go Green Week	2 weeks (1 week in 2012 and 1 week in 2013)
Quarterly meetings	4 meetings (in 4 days)
Observation with external agent	1 day

Appendix 2: Interview schedule at University X

Number	Interviewee	Date	How long?	When?
1	Administration Officer-Transport	23/02/2012	1 hour and 53 min	After observation
2	Waste/Recycling Manager	23/02/2012	2 hours and 10 min	After observation
3	Internal Auditor	24/02/2012	2 hours and 10 min	After observation
4	Environment Manager	16/03/2012	1 hour and 48 min	After observation
5	Transport Manager	04/04/2012	1 hour and 35 min	After observation
6	UTA_1	04/04/2012	1 hour and 24 min	After observation
7	UPE	04/04/2012	58 min	After observation
8	Energy Manager	05/04/2012	1 hour and 6 min	After observation
9	UTA_2	25/04/2012	1 hour and 45 min	After observation
10	External agent	20/12/2012	2 hours	After observation

Interview questions:

1. What is the aim of (name of organisation) to monitor its man-made environmental damage?
2. What is the aim of (name of organisation) to reduce its man-made environmental damage?
3. Why are you, as an individual person, taking part in monitoring and reducing (name of organisation)'s environmental impacts?
4. Does (name of organisation) have to meet any authority bodies' environmental obligation?
5. Do you have to report to any authority body? Why? How often?
6. Do you manage (name of organisation)'s environmental footprint in relation with any environmental standard? Why?
7. Is application of these standards compulsory or voluntary?

8. Do you need to apply for any environmental certificate? If yes, does any verifier/observer from such certifying body(ies) audit here to make sure you are complying with requirements?
9. How long is (name of organisation) monitoring its environmental performance in purpose of reducing its environmental footprint?
10. How many years are you working in relation with monitoring environmental performance?
11. Who are the other key people in this community/team?
12. Who is the greenest person in this community/team?
13. When did you find yourself interested in green way of living? How?
14. How do you get benefit from your academic qualification in what you are doing?

Appendix 3: Annex A of Kyoto Protocol

Greenhouse gases
Carbon dioxide (CO_2)
Methane (CH_4)
Nitrous oxide (N_2O)
Hydrofluorocarbons (HFCs)
Perfluorocarbons (PFCs)
Sulphur hexafluoride (SF_6)

Sectors/source categories
Energy
- Fuel combustion
  - Energy industries
  - Manufacturing industries and construction
  - Transport
  - Other sectors
  - Other
- Fugitive emissions from fuels
  - Solid fuels
  - Oil and natural gas
  - Other

Industrial processes
- Mineral products
- Chemical industry
- Metal production
- Other production
- Production of halocarbons and sulphur hexafluoride
- Consumption of halocarbons and sulphur hexafluoride
- Other

Solvent and other product use
Agriculture
- Enteric fermentation
- Manure management
- Rice cultivation
- Agricultural soils
- Prescribed burning of savannas
- Field burning of agricultural residues
- Other

Waste
- Solid waste disposal on land
- Wastewater handling
- Waste incineration
- other

Source: Kyoto Protocol (UN, 1998, p.19)

Appendix 4: Annex B of Kyoto Protocol

Party	Quantified emission limitation or reduction commitment (percentage of base year or period)
Australia	108
Austria	92
Belgium	92
Bulgaria*	92
Canada	94
Croatia*	95
Czech Republic*	92
Denmark	92
Estonia*	92
European Community	92
Finland	92
France	92
Germany	92
Greece	92
Hungary*	94
Iceland	110
Ireland	92
Italy	92
Japan	94
Latvia*	92
Liechtenstein	92
Lithuania*	92
Luxembourg	92
Monaco	92
Netherlands	92
New Zealand	100
Norway	101
Poland*	94
Portugal	92
Romania*	92
Russian Federation*	100
Slovakia*	92
Slovenia*	92
Spain	92
Sweden	92
Switzerland	92
Ukraine*	100
United Kingdom of Great Britain and Northern Ireland	92
United States of America	93

*Countries that are undergoing the process of transition to a market economy.

Source: Kyoto Protocol (UN, 1998, p.20)

Appendix 5: Carbon emission sources from the HE sector

<table>
<tr><th>Source</th><th colspan="2">Description</th></tr>
<tr><td rowspan="2">Energy – fossil fuel combustion (gas, coal, oil) and electricity use</td><td colspan="2">Building related:
• Non-residential buildings - teaching, research, catering, sports, other
• Residential buildings – student and staff accommodation</td></tr>
<tr><td colspan="2">Non-building related:
• Campus lighting, sports grounds</td></tr>
<tr><td>Transport</td><td>• Land transport – car, rail, bus, other
• Air travel – domestic flights, international flights</td><td>Includes:
• Institutions' own vehicle fleet
• Business travel – management, research, teaching
• Commute – staff and students</td></tr>
<tr><td>Other</td><td colspan="2">Water, waste, procurement (assets, goods and service), land use</td></tr>
</table>

Source: SQW report to HEFCE et al. (SQW, 2009, p.ii)

Appendix 6: The three Scopes

Scope	Description	Example
Scope 1: Direct GHG emissions	GHG emissions from sources that are owned or controlled by organisations including:	Resulting from:
	a. Generation of electricity, heat, or steam	a´. Combustion of fuel in stationary sources, e.g. boilers, furnaces, turbines
	b. Physical or chemical processing	b´. Manufacture or processing of chemicals and materials, e.g. cement, aluminium, adipic acid, ammonia manufacture, and waste processing
	c. Transportation of materials, products, waste, and employees	c´. The combustion of fuel in company owned/controlled mobile combustion sources e.g. trucks, trains, ships, airplanes, buses, and cars
	d. Fugitive emissions	d´. Intentional or unintentional releases e.g. equipment leaks from joints, seals, packing, and gaskets; methane emissions from coal mines and venting; hydrofluorocarbon (HFC) emissions during the use of refrigeration and air conditioning equipment; and methane leakages from gas transport
Scope 2: Electricity indirect GHG emissions	GHG emissions from the generation of purchased electricity that is consumed in its owned or controlled equipment or operations	Purchased electricity
Scope 3: Other indirect GHG emissions	GHG emission form any sources not included in scope 1 and 2.	

Source: Developed by author based on WRI's The Greenhouse Gas Protocol (WRI, 2004, pp.27-29)

Appendix 7: DEC template with guidelines

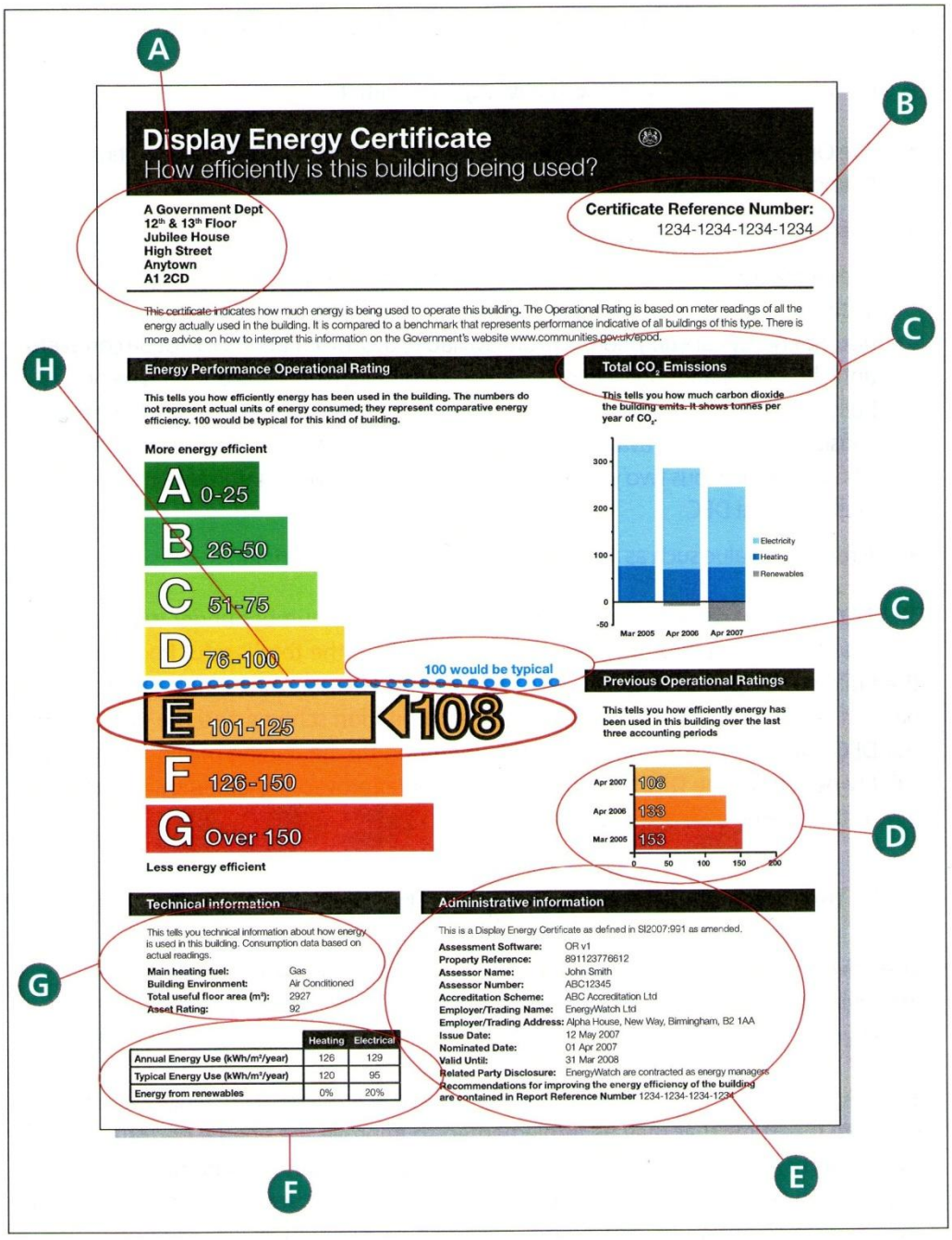


Figure 14: DEC template with indicators to guideline – Source: EPBCI's Guideline

A	This provides information about the building that the DEC applies to.
B	Every DEC has a unique number. This number can be used to locate and get a copy of the certificate from the national register and to verify the validity of a DEC.
C	The energy used by the building is converted into an amount of carbon dioxide (CO_2). Different types of fuel emit different amounts of CO_2. This shows how the energy use has changed over the last three years. The smaller the bar, the better the performance. This building has improved its performance over the last three years. Below the zero line show CO_2 savings from Low and Zero Carbon energy sources. The benchmark is the average energy performance for a building of this type. A number below the line indicates the building is below average energy performance. A number above the line indicates the building is above average performance.
D	This section of the DEC shows Operational Ratings from previous years. This building has improved its Operational Rating i.e. is using less energy and emitting less CO_2 than in previous.
E	This shows key information about how the certificate was prepared. **Assessment software:** This shows which energy assessment method was used to produce the certificate. **Property reference:** This is a unique reference number which identifies the building. **Assessor Name and Number Accreditation scheme:** This identifies the assessor who produced the certificate with details of their accreditation scheme and their membership number. **Issue and nominated date:** This shows the date of issues of the certificate and the date from which the DEC is valid (i.e. the nominated date).
F	This provides technical information about energy use. Further details are available in a full technical table.
G	This shows the relevant elements of technical information used to produce the certificate. **Main Heating Fuel:** This indicates the main type of fuel used to heat the building. **Building Environment:** This indicates how the internal environment of the building is conditioned. **Total useful floor area:** This is the total area of all enclosed spaces measured to the internal face of the external walls (in accordance with the definition in the Building Regulations). **Asset Rating:** The asset rating of a building reflects the energy performance of that building in terms of the way it is built rather than the way it is used (standard use is assumed). It will appear here if the building has an Energy Performance Certificate (EPC). Asset ratings are on a scale of 0-150, where 0 is the most energy efficient building and 150 is the least energy efficient building.
H	This is the Operational Rating for this building. The rating shows the energy performance of the building as it is being used by the occupants. A building with performance equal to one typical of its type would therefore have an Operational Rating of 100. A building that resulted in zero CO2 emissions would have an OR of zero, and a building that resulted in twice the typical CO2 emissions would have an OR of 200. This rating indicates the building is being operated below average performance for a building of this type.

Appendix 8: Sample of Salix Persistence Factors

Work Types - Single Fuel Compliance Tool Version 29

SALIX
SOLVING ENERGY EFFICIENCY FINANCE IN THE PUBLIC SECTOR

Project Type	Work Type	Current PF (Basic maintenance)	Status/Comments
Computers & IT solutions	Network PC power management	4.00	Currently a Salix PF - updated for V26
	CRT to flat screen LCD	7.20	Currently a Salix PF - updated for V26
	Virtualisation	4.50	Currently a Salix PF - updated for V26
	Thin computers	4.50	Currently a Salix PF - updated for V26
	Uninterruptible Power Supplies	18.00	
	Free Cooling for ICT	13.68	
	Evaporative cooling for ICT	13.68	
	Energy Efficient File Storage Replacement	4.50	Currently a Salix PF - updated for V26
	LED monitors instead of LCD (cost difference)	7.20	Currently a Salix PF - updated for V26
	CRT to LED monitors	7.20	Currently a Salix PF - updated for V26
	Hot aisle/cold aisle containment	10.83	Currently a Salix PF
	Multi Functional Devices	4.50	Currently a Salix PF - updated for V26
	Energy Efficient Server Replacement	4.50	Currently a Salix PF
Hand Dryers	Hand Dryers - replacement to more efficient type	4.18	

Salix Persistence Factors for IT and hand dryers – Source: University X's documents

Appendix 9: Fuel Management

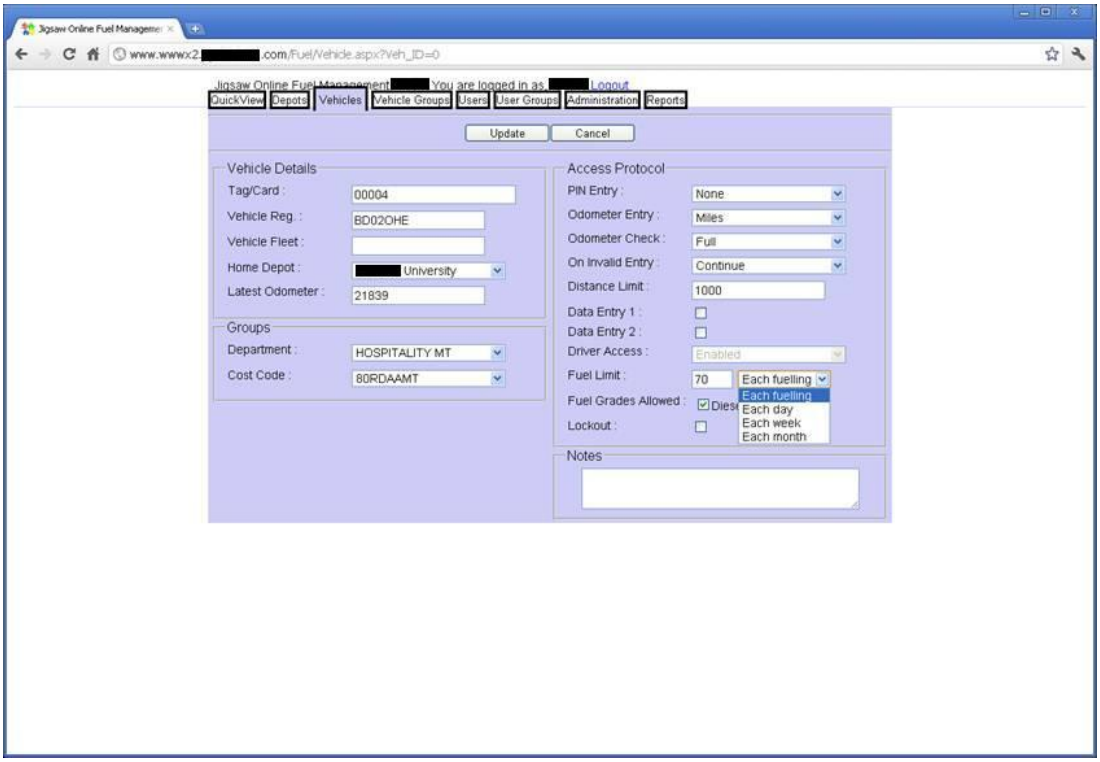


Figure 15: Fuel Management – Source: University X's databank

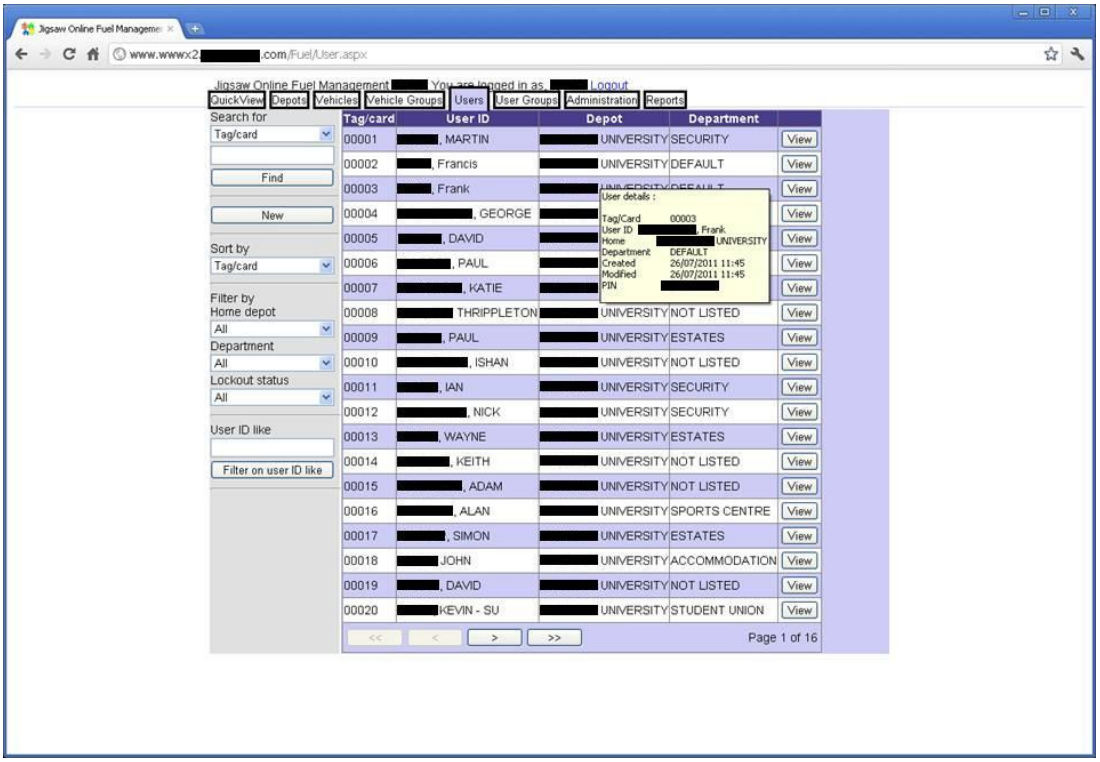


Figure 16: Fuel Management – Source: University X's databank

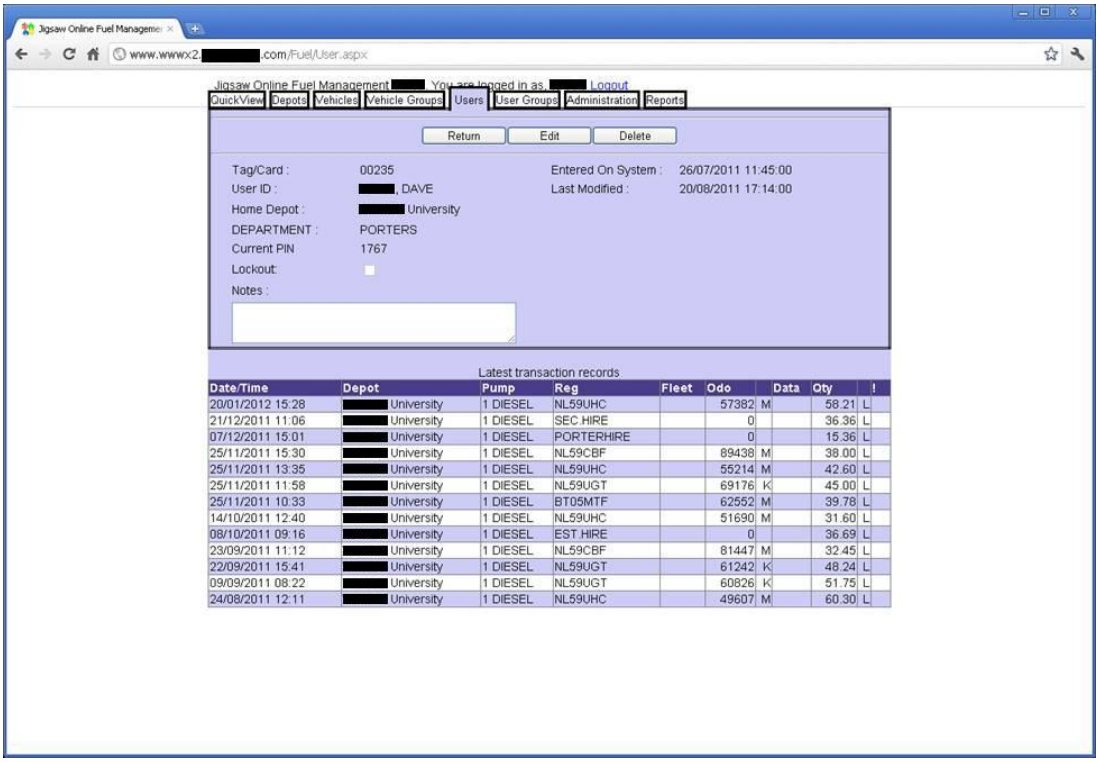


Figure 17: Fuel Management – Source: University X's databank

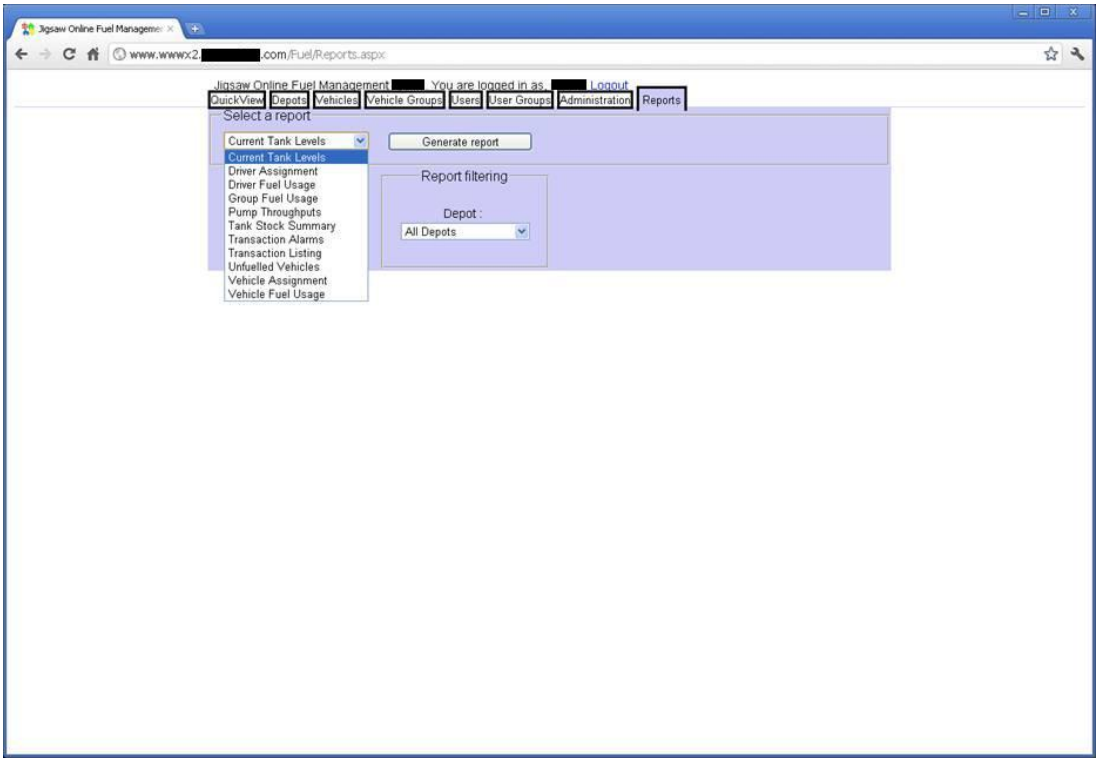


Figure 18: Fuel Management – Source: University X's databank

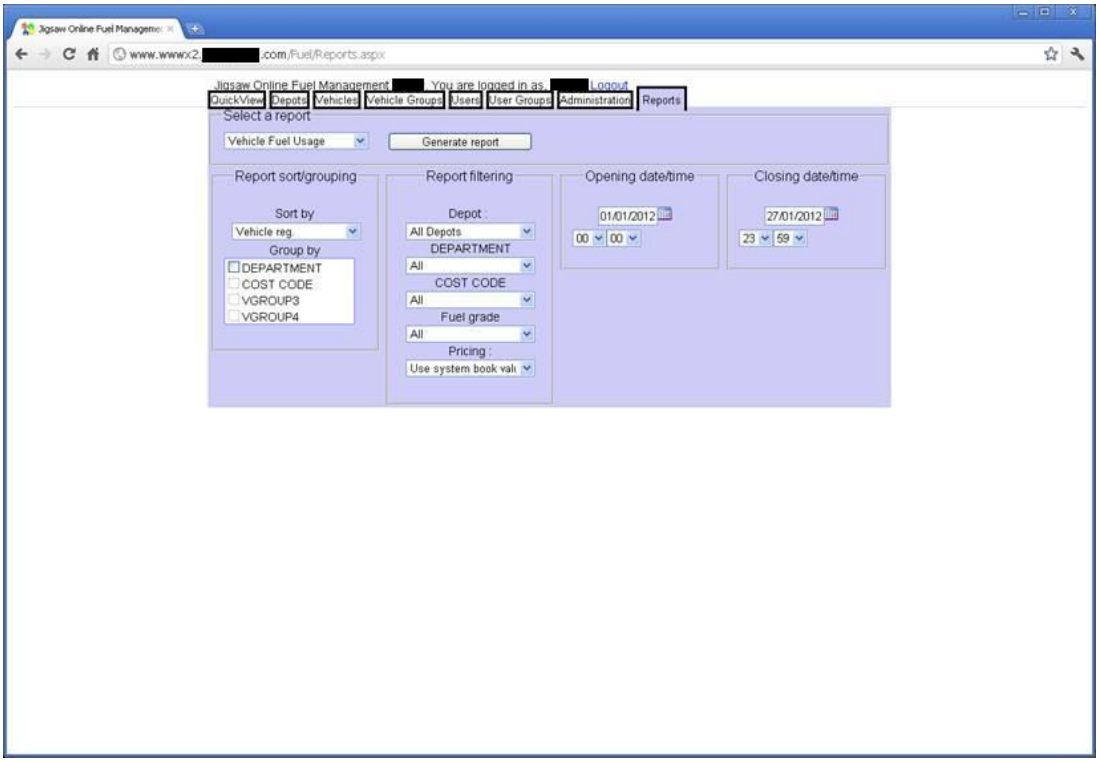


Figure 19: Fuel Management – Source: University X's databank

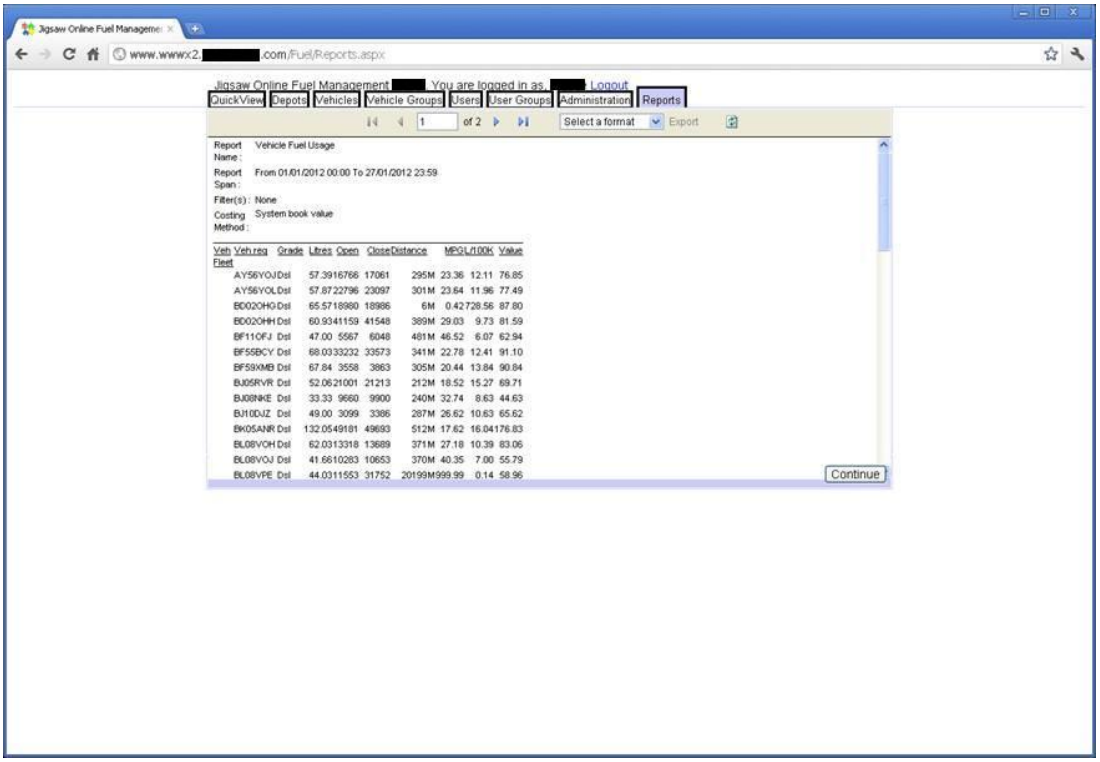


Figure 20: Fuel Management – Source: University X's databank

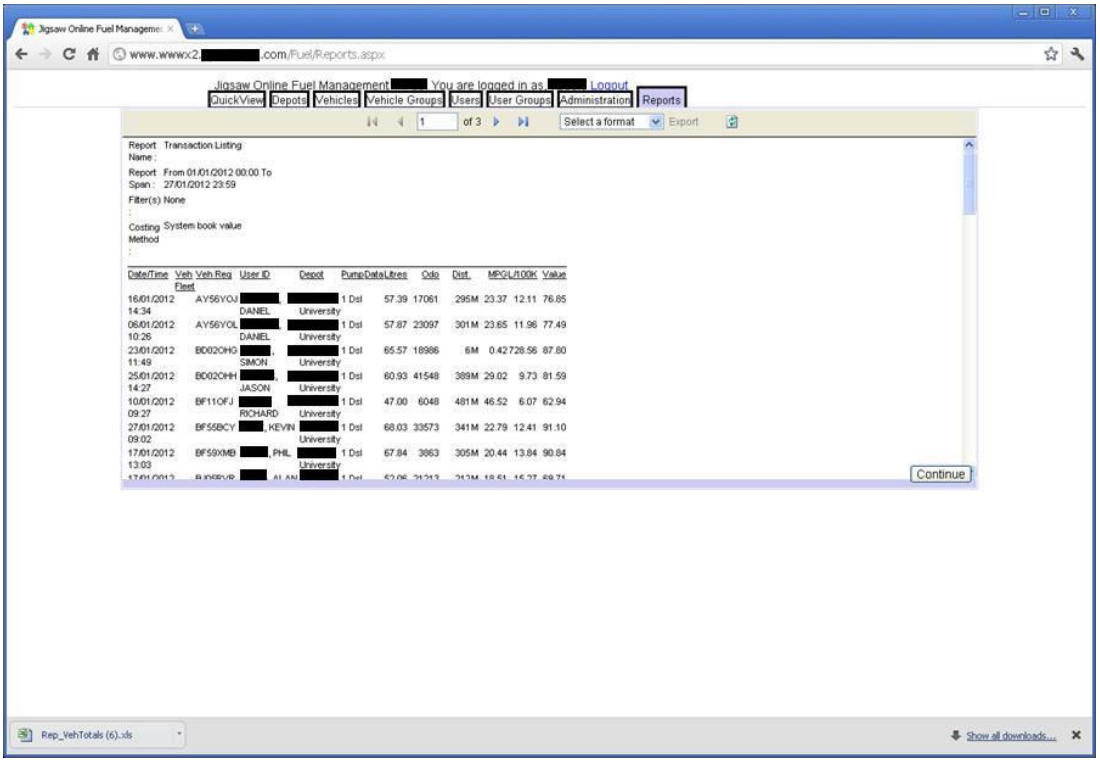


Figure 21: Fuel Management – Source: University X's databank

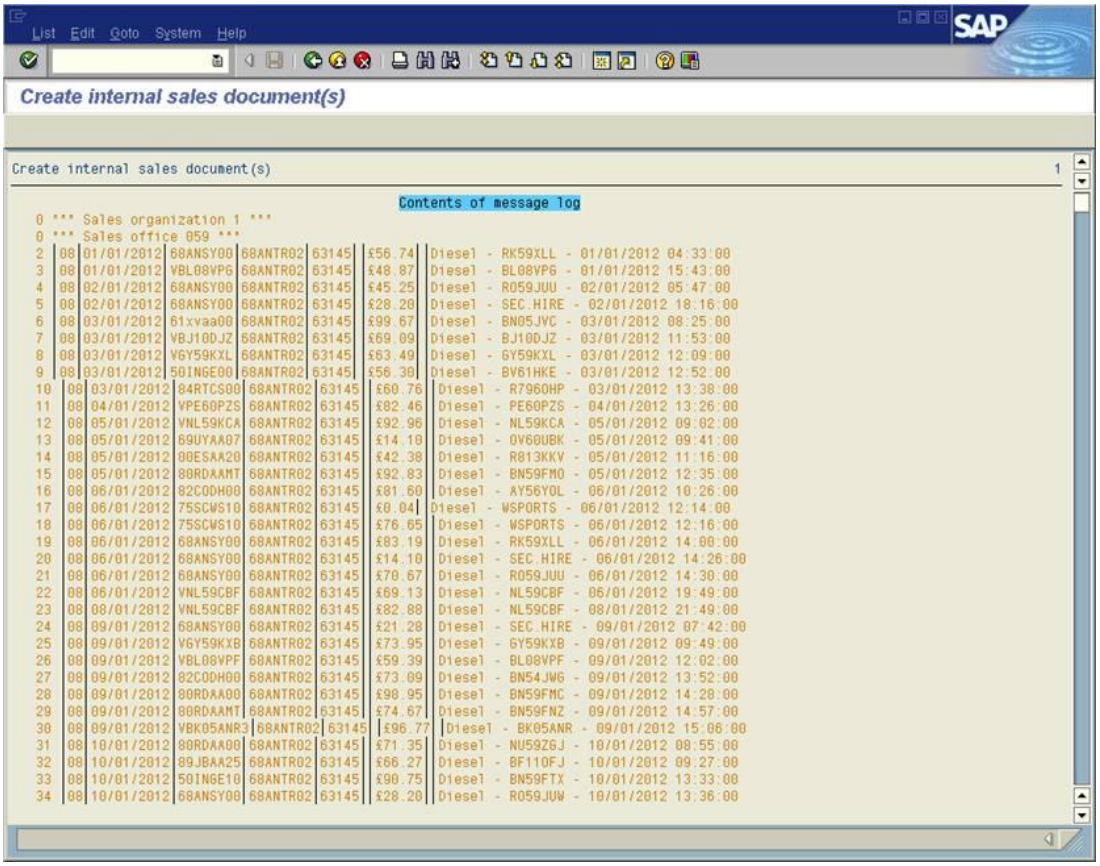


Figure 22: Fuel Management – Source: University X's databank

Appendix 10: Energy consumption ranking

Energy consumption ranking competition – Source: University X's Facebook page dedicated to energy saving activities

Appendix 11: Case B

As mentioned in Chapter 3, the same investigation at a second organisational field was conducted; however the level of generated material in comparison with University X did not make it into a case which could enable a comparative analysis of A and B. Therefore, whilst this dissertation is focused on University X but *only* key information regarding fieldwork at case B is briefly provided here and repeating explanations common between two cases is avoided.

1. Overview

Case B was a privately owned USA based global manufacturing company with its survival and profitability directly dependent on the production of rolled aluminium sheet from aluminium scrap requiring very high levels of energy inputs which massive portion of that was supplied from non-renewable fossil fuels resulting in high-level carbon emissions. For example, one significant regulatory difference between University X and case B was that there are different national regulations on environmental issues. Thus University X as a wholly UK-based entity confronts a much less complex regulatory environment than case B as a multinational entity with a US headquarters while on the other hand, there was the fact that the UK parliament enacted the world's first ever Climate Change Act in 2008, at time when there was as yet no similar initiative voted into law in the USA, where case B's head office was based. In spite of distinct differences between University X and case B (e.g. public versus private sector, service/educational focus versus production/manufacturing one, and UK-based versus US-based global organisation) there were overlaps between them in certain respects such as publishing CSR-oriented reports (with

different length of history though), having environmental agenda and different environmental targets particularly GHG reduction, and more importantly the strength of commitment in each organisation to promoting green outcomes.

Researching in sites that were dissimilar in the respects indicated above (but seriously committed to reducing negative environmental impacts) could be advantageous particularly when Foucauldian approach is adopted. So, a discursive analysis could result in discovering discursive 'regularities'.

2. Research process

To operationalise this investigation 'on site', within case B I started out undertaking general and broad-ranging conversations with RPs about their organisation and about how (and for how long) environmental impacts had become addressed there. I had these broad conversations with subjects at case B at introductory sessions in the form of initial phone calls, with their CSO (28 minutes) and the Environment Manager at UK plant (20 minutes), followed by a joint meeting with all RPs based in the headquarters (58 minutes).[85]

I also undertook some initial general observation in order to get a feel for how 'things worked' there. In this regard, I did a plant tour and became familiar with the operation of producing aluminium ingots from aluminium scrap. I undertook this general observation at the Organisation's headquarters at time slots available (30 minutes) between observation sessions where I was learning about specific processes of environmental accounting implementation.

[85] These are not considered as part of the subsequent interviews on the research question, and therefore are not included in the interview schedule.

I then undertook the main fieldwork investigation which is summarised in detail at the end of this appendix, covering what I did, for how long, and at which site. In addition to the observation-based research I undertook 4 semi-structured interviews with 4 subjects who were acting as RPs there including 1 person in shop floor and 3 in head office. The table at the end of this appendix provide specific information about who I interviewed, at which site, on what date, for how long, and whether it was after observation or before.

During the investigation I also collected documents and artefacts which could assist me in undertaking the historical analysis as well as supporting the study of contemporary practices.

2.1. Access – an ongoing progress

The process of gaining access to Case B was as follows. I first made contact with them at a careers fair in Manchester in June 2010, where I had gone with the specific objective of looking for potential organisations that would fit the profile of an organisation actively committed to developing accounting-based approaches to addressing integral environmental issues. Case B had a stand there and I noticed that the term 'sustainability' figured prominently in the posters that they had on their stand. I therefore started a conversation with one of the company's representatives concerning how sustainability was practised at Case B. I then explained briefly about my research project and expressed an interest in a follow-up discussion where I could find out more about the company and explore whether the Organisation might

be willing to give me access for my proposed project. He then gave me the name and email address of Case B's Chief Sustainability Officer (CSO).

After looking at the corporate website and reading the materials posted on line concerning sustainability, I became very interested in making further contact with them. I sent an email to the CSO introducing myself and saying how I had found out about the Organisation and been given his email address. I also explained briefly the nature of my research interest, and indicated the kind of access I would ideally like to have, plus brief details concerning the kinds of things I would hope to look at. I received his emailed response in less than 24 hours, in which he gave me his phone number and suggested that we should speak further over the phone. I was then able to arrange a mutually convenient time on the following day, and spoke with him at some length. The outcome was that he indicated that he was willing to give me access both to their local plant in the UK and to relevant people at Case B's global headquarters which were in the USA.

He then sent an email to the Environment Manager at the UK site and introduced me to him, copying in my email address. In that email, the CSO also asked the Environment Manager to cooperate with me regarding my project. In particular he asked him to show me details of how they reported on their environmental footprint, and to arrange a plant tour for me so that I could undertake an initial observation of how they were operating at shop floor level. Later he also showed me how environmental data was generated and recorded there.

Following that email, I then emailed the Environment Manager at the UK site to introduce myself and arrange a date and time to visit him and the plant. On that first visit, I explained my project to him and described what I was looking for.

At headquarters, I was introduced by the CSO to the other members of the sustainability team at a meeting which he had arranged in his office. At the meeting he asked me to give a brief explanation about my project, the reasons for my visit to meet with the sustainability team at headquarters, and what I would ideally require to fulfil my research objectives.

Again a high level of access was granted to me in terms of having permission to observe their activities, having a copy of relevant documents, and interviewing RPs. The only problematic area was the shop floor itself due to health and safety issues associated with the manufacturing and production processes. This was potentially a very dangerous area and so I always had to be with Environment Manager. Whenever a truck or mobile machine was on the move in the shop floor area, we had to wait for it to pass, which might take several minutes; also we were allowed to approach no closer than 5 meters to any production equipment that was in use, or to any production activity.

No such limitations applied however in the office areas, either in the UK plant or the headquarters. I was allowed to sit next to RPs at their desks and to observe directly how they used (and worked with) generated numbers. I was also allowed to have a screenshot of some of the key IT tools (e.g. their internal network) which were a key feature in the accounting process being developed to measure environmental costs

and outputs. At headquarters, there were times when I was left to my own devices, and I sometimes used these times as an opportunity to walk around inside the head office area to explore how and how far environmental issues were paid attention to at office level.

Finally, as part of the agreement I negotiated with the CSO at Case B, I agreed to share the results of this study with them as a way potentially to help them in improving their environmental accounting procedures.

2.2. Following statements in practice: Collecting documents and generating field material

Doing fieldwork at case B provided me with access to quite a diverse range of primary and secondary data. I was able to gather evidence across the categories I was seeking. In terms of 'archival' material (in the conventional sense as defined in Chapter 3) I was able to consult a mix of both historical and current documents of various kinds (e.g. primary documents such as reports, forms, and documents specifying national and corporate-wide regulations and process specifications, plus secondary literature offering wider contextual information and opinions and reflections from various viewpoints). In terms of fieldwork-generated material I was able to generate material both via observation and semi-structured interviews. This section gives more detail on these forms of data collection, focusing on my fieldwork methods first.

At case B the total of access for observation turned out to relatively restricted. I did a total of 4 days which included observation episodes at the UK operating site and

headquarters, plus at the global headquarters in the USA. The problematic issue was that considerable portion of the reporting process I was looking at was dealt with at head office in the US and the long distance between UK (where I lived) and US did not allow me to be in site frequently in different times over an extensive period of time.

However, the observation sessions in case B took place at locations including the shop floor, the office area of the recycling site, and the headquarters offices. Since the headquarters offices of case B were open-plan, I was able relatively easily to have a quite wide-ranging set of observations of a whole range of activities taking place. These included witnessing how RPs were communicating each other.

In terms of the kinds of things that I was able to see in observation sessions included key aspects of the whole process through which environmental data was generated and then put to use for a range of different purposes such as voluntary reporting and public transparency, carrying out environmental projects, setting internal targets, internal meetings and performance monitoring, and employee acknowledgement. For instance, I observed how the Environment Manager sent recorded environmental data from the shop floor to the central headquarters database, where I again saw the numbers which had been relayed, among the numbers submitted not only from the UK plant but also from all the other global operating sites of case B. The same as in University X, I had permission to have my smart-pen switched on during all observation sessions and interviews. I recorded all the conversations (which I

transcribed all by myself later for analysis) along with taking note on its specialised notebook.

I was also permitted to take photos on a number of occasions, including when I was permitted to take a screenshot of some key pages while staff were working with specialised software called Performance Data Management (PDM). I was also provided with useful documents such as copies of some of their spreadsheets, a form of table used to gather all collected data in one place before transforming it into CSR-oriented reports, and website link to guidelines they were using in implementing environmental accounting and reporting, their CSR-oriented reports as well as the summary versions.

I also used a conventional notebook to write up contextual information providing a richer description of whatever I had seen and heard during an observation session in addition to my own reflections about that sessions immediately afterwards. Since I applied exactly the same tactics I had employed at University X, I avoid repetition as they are already explained in Chapter 3. However, just to highlight that due to limited time at hand at head office of case B, I recorded my reflective notes with my smart-pen most of the time to make sure I would not omit any important details which might be difficult to recall later on.

I ensured that whenever possible observation sessions were not limited to working hours. I used the opportunity to have lunch with RPs at case B's headquarter. Also on one occasion I was able to observe the CSO's fuel-efficient vehicle in operation, when he gave me a lift to where I was going that evening, when he was going home

at the end of the working day.[86] I found these times outside business hours were a valuable opportunity to get to know people better, both through having informal conversations with them about diverse issues and through getting the opportunity to observe how they were integrating a green way of living into their lifestyle.

I also spent time by myself outside formal observations when I could just walk around the site (office area and not shop floor for health and safety issues) and see how far I could find traces of environmental accounting statements as well as getting to know more about their organisational green 'culture and practices' for example by going to their mini exhibition hall or sitting in their catering area that gave me more opportunities to observe any green or non-green forms of behaviour or activity that might be taking place there such as observing other employees' response to environmentally-friendly 'objects' like whether or not they used different recycling bins correctly.

As the final aspect of my observational and interview methodology, I devoted time specifically to setting up and undertaking semi-structured interviews. In all, I interviewed 4 people. I recorded all interviews with my smart-pen, and as with the observation sessions, I took notes at the end of each interview session in my second notebook, including any reflections I had on the interview. Again where for some reason I had limited time before my next activity, I recorded such reflections on my smart-pen.

[86] It is noteworthy to mention that due to available options in the US car market and vehicles generally I saw on US roads it was fuel-efficient. However, it was fuel-intensive car in comparison with vehicles generally used in the UK.

Concerning the ‘archival’ materials which I gathered in order to gain a better understanding of the ‘experience’ of environmental accounting developed and implementation, I benefited from a range of documents in the same way as I did at University X. Some of them were provided to me by RPs either in hard copy or electronic form or website pages, often via email after meetings or observations which they knew to be useful sources of information. I also used their website as a source of materials. The range of document types they gave me was similar to University X and details are already explained in Chapter 3. The rest of the documents I gathered were the result of my own investigations into key issues and my following of what one might call ‘chain of connections’ through trawling through online resources. These included such websites as those of USA national government, and of government or government-sponsored agencies (e.g. US Environmental Protection Agency); they also included those of advisory bodies (e.g. GRI), of the UN and the UN-linked divisions (e.g. UNEP, UNFCCC), of the sector association (e.g. The Aluminum Association), and of non-governmental research bodies (e.g. WRI).

Finally, all the generated materials were then prepared and analysed the same as University X’s materials which are explained in Chapter 3.

Details of fieldwork at case B	
What I did.	How long?
Plant tour	Half a day
Observation with Environment Manager (UK site)	2 days
Observation with CSO	Half a day
Observation with Director of Sustainability	Half a day
Observation with Sustainability Lead	Half a day

Interview schedule at case B				
Number	Interviewee	Date	How long?	When?
1	Environment Manager	04/08/2011	1 hour and 20 min	After observation
2	CSO	25/07/2013	56 min	After observation
3	Director of Sustainability	25/07/2013	1 hour and 2 min	After observation
4	Sustainability Lead	25/07/2013	50 min	After observation

Note: Interview questions used to interview RPs at case B were similar to questions included in Appendix 2.

Reference List

Aerts, W. and Cormier, D. (2009) 'Media legitimacy and corporate environmental communication.' *Accounting, Organizations and Society*, 34(1) pp. 1-27.

Ahrens, T. and Chapman, C. S. (2006) 'Doing qualitative field research in management accounting: Positioning data to contribute to theory.' *Accounting, Organizations and Society*, 31(8) pp. 819-841.

Ahrens, T. and Mollona, M. (2007) 'Organisational control as cultural practice - A shop floor ethnography of a Sheffield steel mill.' *Accounting, Organizations and Society*, 32(4–5) pp. 305-331.

Ahrens, T. and Chapman, C. S. (2007) 'Management accounting as practice.' *Accounting, Organizations and Society*, 32(1–2) pp. 1-27.

Al-Tuwaijri, S. A., Christensen, T. E. and Hughes Ii, K. E. (2004) 'The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach.' *Accounting, Organizations and Society*, 29(5–6) pp. 447-471.

Astrom, S. (1968) 'The question of convening an international conference on the problems of human environment - E/4466/Add.1.' [Online]. [Accessed on 4/11/2013] http://www.un.org/ga/search/view_doc.asp?symbol=E/4466/Add.1

Bebbington, J. (2001) 'Sustainable development: a review of the international development, business and accounting literature.' *Accounting Forum*, 25(2) pp. 128-157.

Bebbington, J. and Gray, R. (2001) 'An Account of Sustainability: Failure, Success and a Reconceptualization.' *Critical Perspectives on Accounting*, 12(5) pp. 557-588.

Bebbington, J., Unerman, J. and O'Dwyer, B. (2007) *Sustainability Accounting and Accountability*. London: Routledge.

Bebbington, J., Unerman, J. and O'Dwyer, B. (2014) *Sustainability Accounting and Accountability*. 2nd ed., London: Routledge.

Beets, S. D. and Souther, C. C. (1999) 'Corporate Environmental Reports: The Need for Standards and an Environmental Assurance Service.' *Accounting Horizons*, 13(2) pp. 129-145.

Burchell, G., Miller, P., Gordon, C. and Foucault, M. (1991) *The Foucault effect: Studies in governmentality with two lectures by and an interview with Michael Foucault.* London: Harvester Wheatsheaf.

Burnett, R. D. and Hansen, D. R. (2008) 'Ecoefficiency: Defining a role for environmental cost management.' *Accounting, Organizations and Society*, 33(6) pp. 551-581.

Carson, R. (1962) *Silent Spring.* New York: Fawcett Crest.

Chandler, A. D. (1977) *The visible hand: the managerial revolution in American business.* Cambridge, Mass: Harvard University Press.

Cho, C. H. and Patten, D. M. (2007) 'The role of environmental disclosures as tools of legitimacy: A research note.' *Accounting, Organizations and Society*, 32(7–8) pp. 639-647.

Cho, C. H., Roberts, R. W. and Patten, D. M. (2010) 'The language of US corporate environmental disclosure.' *Accounting, Organizations and Society*, 35(4) pp. 431-443.

Clarke, C. (2003) 'Sustainable development action plan for Education and Skills.' [Online]. [Accessed on 11/11/2013] http://dera.ioe.ac.uk/10377/1/DfES-Sustainable%2520development.pdf

Clarkson, P. M., Li, Y., Richardson, G. D. and Vasvari, F. P. (2008) 'Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis.' *Accounting, Organizations and Society*, 33(4–5) pp. 303-327.

Czarniawska, B. (2004) 'On Time, Space, and Action Nets.' *Organization*, 11(6) pp. 773-791.

Czarniawska, B. (2007) *Shadowing and other techniques for doing fieldwork in modern societies.* Malmö, Copenhagen, Oslo: Liber and Copenhagen Business School Press.

de Villiers, C. and van Staden, C. J. (2006) 'Can less environmental disclosure have a legitimising effect? Evidence from Africa.' *Accounting, Organizations and Society*, 31(8) pp. 763-781.

DECC. (2014) 'CRC Energy Efficiency Scheme.' [Online]. [Accessed on 29/07/2014] https://www.gov.uk/government/policies/reducing-demand-for-energy-from-industry-businesses-and-the-public-sector--2/supporting-pages/crc-energy-efficiency-scheme

Deegan, C. and Rankin, M. (1999) 'The Environmental Reporting Expectations Gap: Australian Evidence.' *The British Accounting Review*, 31(3) pp. 313-346.

Denham, J. (2008) 'Grant Letter: Higher Education Funding 2008-09.' [Online]. [Accessed on 12/11/2013] http://www.hefce.ac.uk/news/newsarchive/2008/grantletter/

Denham, J. (2009) 'Grant Letter: Higher Education Funding 2009-10.' [Online]. [Accessed on 12/11/2013] http://www.hefce.ac.uk/media/hefce/content/news/events/2009/grant_letter_0910.pdf

Dierkes, M. and Preston, L. E. (1977) 'Corporate social accounting reporting for the physical environment: A critical review and implementation proposal.' *Accounting, Organizations and Society*, 2(1) pp. 3-22.

Drucker, P. F. (Ed.). (1969). *Preparing Tomorrow's Business Leaders Today*. Englewood Cliffs, N.J.: Prentice-Hall.

Ezzamel, M. and Hoskin, K. (2002) 'Retheorizing accounting, writing and money with evidence from Mesopotamia and ancient Egypt.' *Critical Perspectives on Accounting*, 13(3) pp. 333-367.

Ferreira, A. and Hendro, B. (2010) 'Environmental management accounting and innovation: An exploratory analysis.' *Accounting, Auditing & Accountability Journal*, 23(7) pp. 920-948.

Fetterman, D. M. (1989) *Ethnography: Step by step.* London: Sage.

Florence, M. (1994) 'Foucault, Michel, 1926 –.' *In* Gutting, G. (ed.) *The Cambridge companion to Foucault*. Cambridge: Cambridge University Press, pp. 314-320.

Florence, M. (2000) 'Foucault.' *In* Faubion, J. D. (ed.) *Aesthetics, method, and epistemology: Essential works of Foucault, 1954-1984, Vol. 2*. London: Penguin, pp. 459-463.

Foucault, M. (1972) *The archaeology of knowledge.* London: Tavistock Publications.

Foucault, M. (1977) *Discipline and Punish: The birth of the prison.* New York: Vintage Books.

Foucault, M. (1980) 'Truth and Power.' *In* Gordon, C. (ed.) *Power/knowledge: selected interviews and other writings, 1972-1977*. New York: Pantheon Books,

Foucault, M. (1982) 'Afterword: The Subject and Power.' *In* Dreyfus, H. and Rabinow, P. (eds.) *Beyond Structualism and Hermeneutics*. Chicago: University of Chicago Press, pp. 208-226.

Foucault, M. (1983) *Discourse and Truth: The Problematization of Parrhesia*. Six lectures given by Michel Foucault at the University of California at Berkeley, Oct-Nov 1983. [Online] [Accessed on 22/10/2013] http://foucault.info/system/files/pdf/DiscourseAndTruth_MichelFoucault_1983_0.pdf

Foucault, M. (1986) *The history of sexuality: The use of pleasure.* Vol. 2. Harmondsworth: Viking.

Foucault, M. (1990) *The History of Sexuality: The use of pleasure.* Vol. 2. New York: Vintage Books.

Foucault, M. (2000a) 'The Ethics of the Concern for Self as a Practice of Freedom.' *In* Rabinow, P. (ed.) *Ethics: Subjectivity and truth - The essential works of Michael Foucault, 1954-1984*. Vol. 1. London: Penguin, pp. 281-301.

Foucault, M. (2000b) 'What is Enlightenment?' *In* Rabinow, P. (ed.) *Ethics: Subjectivity and truth - The essential works of Michael Foucault, 1954-1984*. Vol. 1. London: Penguin, pp. 303-319.

Foucault, M. (2000c) 'Preface to The History of Sexuality, Volume Two.' *In* Rabinow, P. (ed.) *Ethics: Subjectivity and truth - The essential works of Michael Foucault, 1954-1984*. Vol. 1. London: Penguin, pp. 199-205.

Foucault, M. (2002) Archaeology of Knowledge. Routledge Ltd.

Foucault, M. (2004) *Sécurité, territoire, population: Cours au Collège de France (1977-1978).* Paris: Gallimard-Le Seuil.

Foucault, M. (2009a) *Security, territory, population: lectures at the Collège de France.* Basingstoke: Palgrave Macmillan.

Foucault, M. (2009b) *History of Madness.* New York: Routledge.

Frandsen, A.-C. (2009) 'From psoriasis to a number and back.' *Information and Organization*, 19(2) pp. 103-128.

Gallhofer, S., Gibson, K., Haslam, J., McNicholas, P. and Takiari, B. (2000) 'Developing environmental accounting: Insights from indigenous cultures.' *Accounting, Auditing & Accountability Journal*, 13(3) pp. 381-409.

GB. (2007) *Energy Performance of Buildings (Certificates and Inspections) (England and Wales) Regulations 2007*. [Online] [Accessed on 05/05/2014] http://www.legislation.gov.uk/uksi/2007/991/pdfs/uksi_20070991_en.pdf

GB. (2008) Climate Change Act 2008. UK.

Geddes, M. (1992) 'The Social Audit Movement.' *In* Owen, D. (ed.) *Green reporting: Accountancy and the challenge of the nineties*. London: Chapman and Hall, pp. 215-241.

Goffman, E. (1959) *The presentation of self in everyday life.* New York: Doubleday.

Gray, R. (1992) 'Accounting and environmentalism: An exploration of the challenge of gently accounting for accountability, transparency and sustainability.' *Accounting, Organizations and Society*, 17(5) pp. 399-425.

Gray, R. (2002) 'The social accounting project and Accounting Organizations and Society Privileging engagement, imaginings, new accountings and pragmatism over critique?' *Accounting, Organizations and Society*, 27(7) pp. 687-708.

Gray, R. (2008) 'Social and Environmental Accounting and Reporting: From Ridicule to Revolution? From Hope to Hubris? - A Personal Review of the Field.' *Issues in Social and Environmental Accounting*, 2(1) pp. 3-18.

Gray, R. and Laughlin, R. (2012) 'It was 20 years ago today: Sgt Pepper, *Accounting, Auditing & Accountability Journal*, green accounting and the Blue Meanies.' *Accounting, Auditing & Accountability Journal*, 25(2) pp. 228-255.

Gray, R., Maunders, K. T. and Owen, D. (1987) *Corporate social reporting: Accounting and accountability.* London: Prentice-Hall International.

Gray, R., Owen, D. and Maunders, K. (1988) 'Corporate Social Reporting: Emerging Trends in Accountability and the Social Contract.' *Accounting, Auditing & Accountability Journal*, 1(1) pp. 6-20.

Hastrup, K. (1997) 'The Dynamics of Anthropological Theory.' *Cultural Dynamics*, 9(3) pp. 351-371.

HEFCE. (2005a) 'Sustainable development in higher education.' [Online]. [Accessed on 11/11/2013] http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/2005/05_28/05_28.pdf

HEFCE. (2005b) 'Sustainable development in higher education: Consultation on a support strategy and action plan.' [Online]. [Accessed on 11/11/2013] http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/2005/05_01/05_01.pdf

HEFCE. (2008) 'Sustainable development in higher education.' [Online]. [Accessed on 12/11/2013] http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/2008/08_18/08_18.pdf

HEFCE. (2009) 'Sustainable development in higher education: 2008 update to strategic statement and action plan.' [Online]. [Accessed on 12/11/2013]

http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/2009/09_03/09_03.pdf

HEFCE, UniversitiesUK and GuildHE. (2009) 'Consultation on a carbon reduction target and strategy for higher education in England.' [Online]. [Accessed on 12/11/2013] http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/2009/09_27/09_27.pdf

HEFCE, UniversitiesUK and GuildHE. (2010) 'Carbon reduction target and strategy for higher education in England.' [Online]. [Accessed on 12/11/2013] http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/2010/10_01/10_01a.pdf

Henri, J.-F. and Journeault, M. (2010) 'Eco-control: The influence of management control systems on environmental and economic performance.' *Accounting, Organizations and Society*, 35(1) pp. 63-80.

Herbohn, K. (2005) 'A full cost environmental accounting experiment.' *Accounting, Organizations and Society*, 30(6) pp. 519-536.

Hopwood, A. G. (1987) 'The archeology of accounting systems.' *Accounting, Organizations and Society*, 12(3) pp. 207-234.

Hopwood, A. G. (2009) 'Accounting and the environment.' *Accounting, Organizations and Society*, 34(3–4) pp. 433-439.

Hoskin, K. (1993) 'Education and the Genesis of Disciplinarity: The Unexpected Reversal.' *In* Messer-Davidow, E., Shumway, D. R. and Sylvan, D. J. (eds.) *Knowledges: Historical and Critical Studies in Disciplinarity*. Charlottesville: University of Virginia Press, pp. 271-304.

Hoskin, K. (2015) '"What about the box?" Some thoughts on the possibility of 'corruption prevention', and of 'the disciplined and ethical subject'.' *Critical Perspectives on Accounting*, 28 pp. 71-81.

Hoskin, K. and Macve, R. (1993) 'Accounting as Discipline: The Overlooked Dupplement.' *In* Messer-Davidow, E., Shumway, D. R. and Sylvan, D. J. (eds.) *Knowledges: Historical and Critical Studies in Disciplinarity*. Charlottesville: University of Virginia Press, pp. 25-53.

Hoskin, K. W. and Macve, R. H. (1986) 'Accounting and the examination: A genealogy of disciplinary power.' *Accounting, Organizations and Society*, 11(2) pp. 105-136.

Hoskin, K. W. and Macve, R. H. (1988) 'The genesis of accountability: The west point connections.' *Accounting, Organizations and Society*, 13(1) pp. 37-73.

Huang, C.-L. and Kung, F.-H. (2010) 'Drivers of Environmental Disclosure and Stakeholder Expectation: Evidence from Taiwan.' *Journal of Business Ethics*, 96(3) pp. 435-451.

Huizing, A. and Dekker, H. C. (1992) 'The environmental issue on the Dutch political market.' *Accounting, Organizations and Society*, 17(5) pp. 427-448.

Jönsson, S. and Macintosh, N. B. (1997) 'CATS, RATS, AND EARS: Making the case for ethnographic accounting research.' *Accounting, Organizations and Society*, 22(3–4) pp. 367-386.

Kendall, G. and Wickham, G. (1999) *Using Foucault's methods.* London: Sage.

Kolk, A. (1999) 'Evaluating corporate environmental reporting.' *Business Strategy and the Environment*, 8(4) pp. 225-237.

Laclau, E. (1990) *New reflections on the revolution of our time.* London: Verso Books.

Laclau, E. (1996) 'The death and resurrection of the theory of ideology.' *Journal of Political Ideologies*, 1(3) pp. 201-220.

Laclau, E. (2000) 'Identity and hegemony: The role of universality in the constitution of political logics.' *In* Bulter, J., Laclau, E. and Zizek, S. (eds.) *Contingency, hegemony and universality*. London: Verso, pp. 44-89.

Laclau, E. (2005) *On populist reason.* London: Verso.

Laclau, E. and Mouffe, C. (1985) *Hegemony and socialist strategy.* London: Verso.

Maunders, K. T. and Burritt, R. L. (1991) 'Accounting and Ecological Crisis.' *Accounting, Auditing & Accountability Journal*, 4(3) pp. 9-26.

Miller, P. and O'Leary, T. (1987) 'Accounting and the construction of the governable person.' *Accounting, Organizations and Society*, 12(3) pp. 235-265.

Miller, P. and O'Leary, T. (1994) 'The Factory as Laboratory.' *Science in Context*, 7(3) pp. 469-496.

Miller, P. and Rose, N. (2008) *Governing the Present: Administering Economic, Social and Personal Life.* Cambridge: Polity Press.

Morales, J. and Lambert, C. (2013) 'Dirty work and the construction of identity: An ethnographic study of management accounting practices.' *Accounting, Organizations and Society*, 38(3) pp. 228-244.

Murchison, J. (2010) *Ethnography Essentials: Designing, conducting, and presenting your research.* San Francisco: Jossey-Bass.

Neu, D., Warsame, H. and Pedwell, K. (1998) 'Managing Public Impressions: Environmental Disclosures in Annual Reports.' *Accounting, Organizations and Society*, 23(3) pp. 265-282.

Neu, D., Everett, J. and Rahaman, A. S. (2009) 'Accounting assemblages, desire, and the body without organs: A case study of international development lending in Latin America.' *Accounting, Auditing and Accountability Journal*, 22(3) pp. 319-350.

Neu, D., Everett, J. and Rahaman, A. S. (2015) 'Preventing corruption within government procurement: Constructing the disciplined and ethical subject.' *Critical Perspectives on Accounting*, 28 pp. 49-61.

Neu, D., Everett, J., Rahaman, A. S. and Martinez, D. (2013) 'Accounting and networks of corruption.' *Accounting, Organizations and Society*, 38(6–7) pp. 505-524.

O'Farrell, C. (2005) *Michel Foucault.* London: Sage.

O'Dwyer, B., Owen, D. and Unerman, J. (2011) 'Seeking legitimacy for new assurance forms: The case of assurance on sustainability reporting.' *Accounting, Organizations and Society*, 36(1) pp. 31-52.

Orij, R. (2010) 'Corporate social disclosures in the context of national cultures and stakeholder theory.' *Accounting, Auditing & Accountability Journal*, 23(7) pp. 868-889.

Owen, D. (Ed.). (1992). *Green reporting: Accountancy and the challenge of the nineties*. London: Chapman and Hall.

Paltrinieri, L. (2012) *L'Expérience du Concept.* Paris: Publications de la Sorbonne.

Patten, D. M. (1992) 'Intra-industry environmental disclosures in response to the Alaskan oil spill: A note on legitimacy theory.' *Accounting, Organizations and Society*, 17(5) pp. 471-475.

Patten, D. M. (2005) 'The accuracy of financial report projections of future environmental capital expenditures: A research note.' *Accounting, Organizations and Society*, 30(5) pp. 457-468.

Pearce, D. W., Markandya, A. and Barbier, E. B. (1989) *Blueprint for a green economy.* London: Earthscan.

Perrini, F. (2006) 'The Practitioner's Perspective on Non-Financial Reporting.' *California Management Review*, 48(2) pp. 73-103.

Power, M. (1997) 'Expertise and the construction of relevance: Accountants and environmental audit.' *Accounting, Organizations and Society*, 22(2) pp. 123-146.

Rubenstein, D. B. (1992) 'Bridging the gap between green accounting and black ink.' *Accounting, Organizations and Society*, 17(5) pp. 501-508.

Silverman, D. (2004a) *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction.* 2nd ed., London: Sage Publications.

Silverman, D. (2004b) *Qualitative Research: Theory, Method and Practice.* 2nd ed., London: Sage Publications.

Skinner, D. (2013) 'Foucault, subjectivity and ethics: Towards a self-forming subject.' *Organization*, 20(6) pp. 904-923.

Spence, C., Husillos, J. and Correa-Ruiz, C. (2010) 'Cargo cult science and the death of politics: A critical review of social and environmental accounting research.' *Critical Perspectives on Accounting*, 21(1) pp. 76-89.

Spence, C., Chabrak, N. and Pucci, R. (2013) 'Doxic sunglasses: A response to "Green accounting and Green Eyeshades: Twenty years later".' *Critical Perspectives on Accounting*, 24(6) pp. 469-473.

SQW. (2009) 'Research into a carbon reduction target and strategy for Higher education in England: A report to HEFCE.' [Online]. [Accessed on 12/11/2013] https://www.hefce.ac.uk/media/hefce/content/pubs/2009/rd1609/rd16_09.pdf

Thomson, I. (2014) 'Mapping the terrain of sustainability and accounting for sustainability.' *In* Bebbington, J., Unerman, J. and O'Dwyer, B. (eds.) *Sustainability Accounting and Accountability*. 2nd ed., London: Routledge, pp. 15-29.

Tinker, T., Neimark, M. and Lehman, C. (1991) 'Falling down the Hole in the Middle of the Road: Political Quietism in Corporate Social Reporting.' *Accounting, Auditing & Accountability Journal*, 4(2) pp. 28-54.

Tomkins, C. and Groves, R. (1983) 'The everyday accountant and researching his reality.' *Accounting, Organizations and Society*, 8(4) pp. 361-374.

Trust, C. *About Us*. [Online] [Accessed on 11/11/2013] http://www.carbontrust.com/about-us

Ullmann, A. A. (1976) 'The corporate environmental accounting system: A management tool for fighting environmental degradation.' *Accounting, Organizations and Society*, 1(1) pp. 71-79.

UN. (1987) 'Report of the World Commission on Environment and Development, General Assembly Resolution 42/187.' [Online]. [Accessed on 04/11/2013] http://www.un.org/documents/ga/res/42/ares42-187.htm

UN. (1992a) 'Earth Summit: UN Conference on Environment and Development.' [Online]. [Accessed on 04/11/2013] http://www.un.org/geninfo/bp/enviro.html

UN. (1992b) 'United Nations Framework Convention on Climate Change.' [Online]. [Accessed on 04/11/2013] http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf

UN. (1998) 'Kyoto Protocol to the United Nations Framework Convention on Climate Change.' [Online]. [Accessed on 06/11/2013] http://unfccc.int/resource/docs/convkp/kpeng.pdf

UN. (2012) 'Doha Amendment to the Kyoto Protocol.' [Online]. [Accessed on 06/11/2013] http://treaties.un.org/doc/Publication/CN/2012/CN.718.2012-Eng.pdf

UNEP. *The Voice of the Environment* [Online] [Accessed on 04/11/2013] http://www.unep.org/About/

UNEP. (1987) *The Montreal Protocol - The Montreal Protocol on Substances that Deplete the Ozone Layer*. [Online] [Accessed on 04/11/2013] http://ozone.unep.org/new_site/en/Treaties/treaty_text.php?treatyID=2

UNFCCC. *Parties and Observers*. [Online] [Accessed on 05/11/2013] http://unfccc.int/parties_and_observers/items/2704.php

UniversitiesUK. (2008) 'Greening spires/Universities and the green agenda.' [Online]. [Accessed on 12/11/2013] http://www.universitiesuk.ac.uk/highereducation/Documents/2008/GreeningSpires.pdf

Webb, D. (2013) *Foucault's Archaeology: Science and Transformation.* Edinburgh: Edinburgh University Press.

White, G. B. (2005) 'How to Report a Company's Sustainability Activities.' *Management Accounting Quarterly*, 7(1) pp. 36-43.

Wildavsky, A. (1976) 'Economy and environment/rationality and ritual: A review essay.' *Accounting, Organizations and Society*, 1(1) pp. 117-129.

Wildavsky, A. (1994) 'Accounting for the environment.' *Accounting, Organizations and Society*, 19(4–5) pp. 461-481.

Wiseman, J. (1982) 'An evaluation of environmental disclosures made in corporate annual reports.' *Accounting, Organizations and Society*, 7(1) pp. 53-63.

Wolcott, H. F. (1995) *The art of fieldwork.* London: Sage.

WRI. (2004) 'A Corporate Accounting and Reporting Standard.' [Online]. [Accessed on 12/11/2013] http://www.wri.org/sites/default/files/pdf/ghg_protocol_2004.pdf